THE IRON AGE

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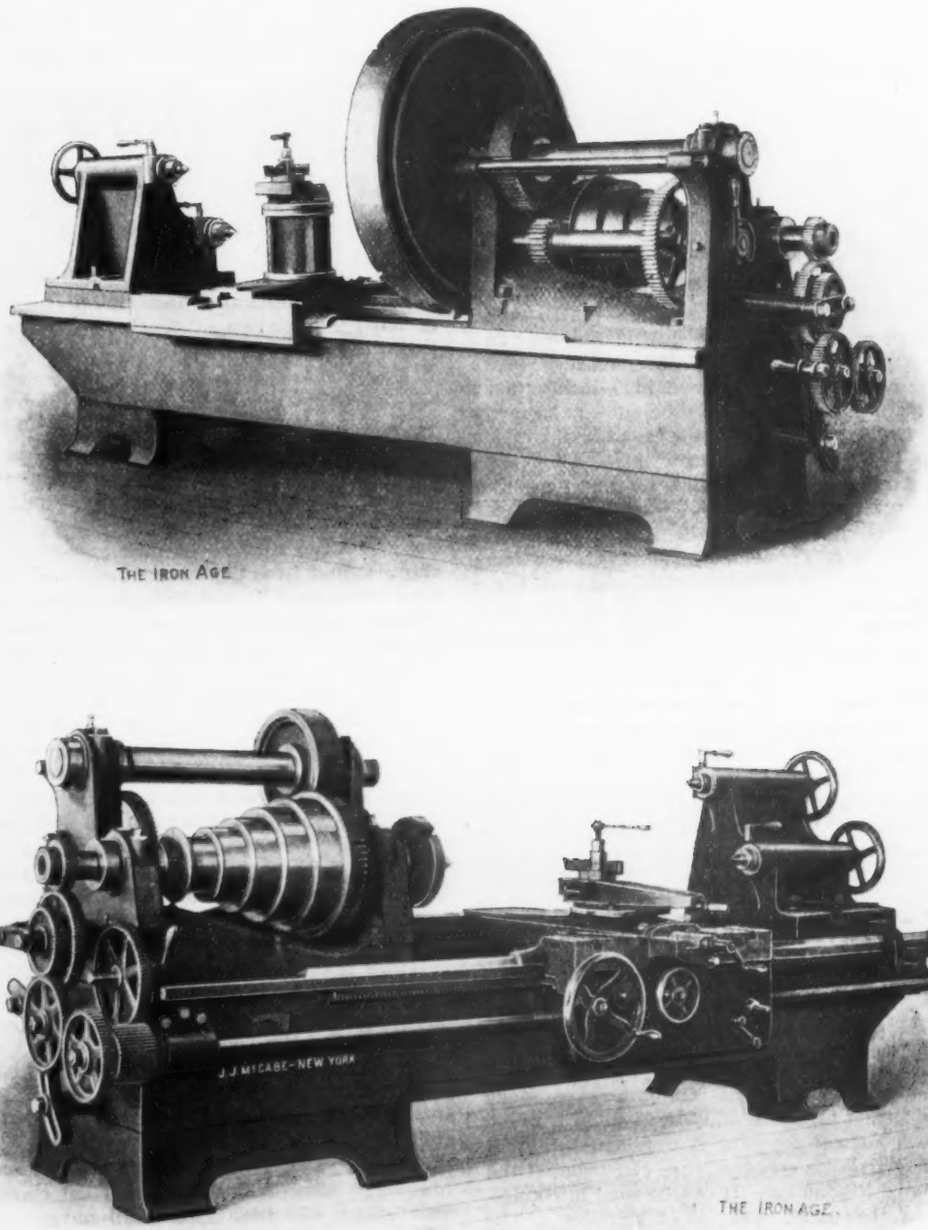
THE IRON AGE

THURSDAY, JANUARY 31, 1901.

The McCabe Improved Double Spindle Lathe.

The redesigned double spindle lathe built by J. J. McCabe of 14 Dey street, New York, is here shown in both front and rear views. Those familiar with the original form of this machine will recognize the improvements from the following description: The upper spindle swings over the bed 49 inches, over the wings of the carriage 45 inches, and over the carriage 40 inches, while the regular spindle swings over the carriage 16 inches. The bed is of ample width so that neither the head nor tail stock overhangs. This adds greatly to the rigidity in handling heavy work on the upper spindle. The leg or support under the tail stock end of the bed is arranged to swivel, making it practically a three point bearing, so as to accommodate itself to an uneven floor or foundation. The head stock is very wide on the base and rigid in construction. A support on the rear side connects the front and rear bearings of the upper spindle. This adds considerable strength at this point. The base is scraped to a flat bearing on the ways of the bed and is held down by six cap bolts. Four adjusting screws are tapped through the flange where the head stock fits between the flat ways of the bed. The fit is made 1-32 inch loose at this point. This allows the head stock to be adjusted slightly in order to properly line up the spindle should the lathe bore tapering any time owing to the wear of the boxes. Boxes are hard bronze, of extra length, carefully fitted and scraped to a perfect bearing. The thrust of the spindles is taken on hardened and



THE McCABE IMPROVED DOUBLE SPINDLE LATHE.

ground tool steel washers of ample proportions. The spindles are large in diameter and made from a high grade of hammered steel of about 45 points carbon. The lower spindle has a 2⅛ inch hole through which the upper spindle is solid. Centers made from tool steel and are 1¾ inches in diameter. The cone is amply large in diameter, with five sections, and driven with 3½ inch double belt.

The gearing is strongly proportioned throughout, of coarse pitch, wide faced and accurately cut. The lower spindle is back geared and the upper one triple geared. An internal geared face plate having a ratio of about 55 to 1 is furnished as an extra for handling unusually heavy work. This gear is carefully cut and is driven by a steel pinion off the lower spindle. The carriage is gibbed front and back, with a bearing of 48 inches in length on the ways, and is 12 inches wide at the bridge or central part. The top is made flush, without any projections, planed and slotted for clamping large pieces in boring. It is powerfully geared, so that it can be operated conveniently, and has quick traverse along the bed with a large diameter hand wheel. Compound rest is supported on a cross slide 24 inches in length on the carriage, and the full width of 12 inches. It has sufficient traverse to face full swing on the upper spindle without shifting the tool or losing any of the bearing. A blocking piece for the compound rest brings the tool level with the upper spindle. It is made so that it can be quickly taken off and the rest set down in its regular place. The cross feed is operated by means of a slip pinion under the cross feed screw. The screw cutting range is two or three times that of the ordinary lathe. With the gears regularly furnished from one thread in 2 inches to 32 threads per inch, including 11½ can be cut on the lower spindle, and from one thread in 4 inches to 16 threads per inch can be cut on the upper spindle. The lead screw is 2 inches in diameter, made from a fine grade of high carbon steel.

The friction feed is driven with splined screw, the threads of the lead screw being used for screw cutting only. The feed is driven by gearing and admits of three changes without removing the gears and by reversing the position of the gear on the end of the lower spindle and the second gear on the stud three additional changes can be obtained, making six changes of feed without using the regular gears, that will give most any feed required. The feed is engaged by a hand wheel, large in diameter, so that it is an easy matter to tighten the friction by hand sufficiently to carry the heaviest cut. The rack pinion is arranged so that it can be entirely withdrawn from the rack while cutting threads. It has a double bearing in the apron, and is supported clear out to the face of the rack. This overcomes any tendency to spring. The reverse motion for controlling the feed is in the apron and is operated by a lever within convenient reach.

The tail stock has a flat bearing 25 inches in length on the ways, and fitted with a taper gib on the front side to take up any wear. It is securely held with two binders and four bolts. An improved device for clamping the spindle is used that overcomes the necessity of splitting the casting at this point. Quick traverse along the bed is by means of crank and steel pinion running in the rack. The usual set over is provided for taper work. The steady rest is substantial in construction and has an opening of 10½ inches. It can be used in connection with both the upper and lower spindles. The countershaft has tight and loose pulleys, driven with 4½-inch double belts. The tight pulley has 5-inch face and the loose pulley at each side 9 inches. All the sliding surfaces of the lathe are carefully fitted by scraping and the cylindrical surfaces are finished by grinding. With a 10-foot bed the machine weighs 10,500 pounds.

The Metal Manufacturers' Association of Columbus, Ohio, held their annual meeting on January 16, at the Neil House in that city. Reports from the officers and various committees showed the organization to be in a flourishing condition. The meeting was followed by a dinner. The officers elected were as follows: Robert Jeffrey of the Jeffrey Mfg. Company, president; G. W. Brown of the Case Mfg. Company, vice-president; H. G. Simpson of the Simpson Iron Company, secretary; A. K. Rarig of the Rarig Mfg. Company, treasurer. The members of the Executive Committee are: C. D. Hudgings of the Columbus Machine Company, Charles Klie of the Columbus Watch Company, J. C. Hearn of the Hearn Machine Company and G. W. Brown of the Case Mfg. Company.

The Premium System in a Machine Shop.

The strike of the machinists employed by the Christensen Engineering Company, Milwaukee, Wis., has brought out an interesting statement by N. A. Christensen, general manager of the company, relative to the premium system which is the cause of the trouble. Mr. Christensen is reported by a local paper to have made the following explanation:

The charge that is being made that we have violated the New York agreement is all nonsense. The strike is against the premium system, which the New York agreement does not touch upon in any shape or manner. This is not, in any scense of the word, a contest in which the International Machinists' Association is a party in interest. In fact, the rules which we have posted in our works, and against which the men are striking, were indorsed by James O'Connell, the president of the International Association of Machinists, in an article published over his signature in the *Engineering Magazine*.

These rules, indorsed by President O'Connell, and which we have adopted, provide that each employee shall be guaranteed his regular day's wages. Then the premium system comes in, which will need an explanation to be understood. As the result of the experience of the past two years, when there was no incentive to men to work with extra rapidity, we formed a basis of the amount of time necessary to complete certain kinds of work, and from this we have made up what is known as a "time limit." For example, a man is given a piece of work to do and the time limit is eight hours; if he completes the work in six hours, as is often the case, he is paid for seven hours work, which at 25 cents an hour would be $1.75, and he would still have three hours more of the day remaining, for which we guarantee to pay him 75 cents, making his wages for the day $2.50, instead of the $2.25 he would earn under the old system. Of course, if the man took the full eight hours to complete the work, it would make no difference so far as his situation was concerned. If he exceeded that time, however, the case might be different. The whole plan is to reward competent workmen. Of course, both the employer and the employee derive a benefit from the adoption of the premium system.

I see that A. W. Holmes, who is said to have the strike in charge here, endeavors to create the impression that as the men proved their capacity to reduce the time necessary for the performance of a piece of work the employers would reduce the time limit therefor, and that this would result in a reduction of wages in the long run. Now let me say in reply to this that among the rules laid down by President O'Connell, and which are among those we posted in our works, are the following, which effectually disposes of that claim:

"2. That the time limit shall never be lower than the average time made with the same tools under the work-day plan.

"3. That no one shall be discharged because of his failure to reduce his time below the limit.

"4. That, in addition to his regular wages, each employee shall be paid one-half of his regular hourly rate for each and every hour he may reduce his time below the prescribed limit.

"That the limit once fixed shall not be lowered except through the introduction of new methods of doing the work."

So far as the charge is concerned that we have refused to keep the New York agreement by shortening the hours of a day's work, let me say that we have done better than that agreement calls for. On the day

that the agreement was signed, May 18, 1900, the men were working 60 hours a week. By the terms of the agreement the number of hours was to be reduced to 57 six months from that date, and to 54 hours at the end of the year, which would be May 18, 1901. Now, when we moved into our new shops, about January 1 last, we reduced the number of hours to 54, while as a matter of fact we were not obliged to do so by the terms of the New York agreement until May 18, 1901, or about four and one-half months later.

I see that Mr. Holmes says that the only shop that has the premium system in use, besides ours, is the Westinghouse works, and he says the men there have the choice of working under it or not. This statement is not true. The system is in use in a large number of shops in different parts of the country, and even in our shop the men have their choice of working under it, the only requirement we make being that they shall not exceed the time limit for doing a piece of work, which is made up on an exceedingly liberal plan so far as the workmen are concerned.

In conclusion I wish to say that the men who have gone out on a strike have themselves violated the New York agreement, about which so much is being said, of which the following is a provision:

"In consideration of this concession in working hours the International Association of Machinists will place no restriction upon the management or production of the shop and will give a fair day's work for a fair day's wage."

Manual Training at Girard College.

The department of manual training at Girard College, Philadelphia, Pa., is one of if not the most important feature of the educational system of the institution. The mechanical department was established a number of years ago and has been enlarged from time to time until it now comprises seven different subdepartments—namely, mechanical drafting, carpentry and pattern making, metal working, blacksmithing, foundry work, plumbing and electrical mechanics.

The wood working department is equipped with all the conveniences of a modern shop, and very creditable work is performed by the older boys. Exhibits are shown of stair building, advanced pattern making and even to the construction of a model two-story house, in which all the work, making of the doors, windows, sashes, frames, &c., has been performed by the older boys.

The metal working or machine department is supplied with the best and newest tools. Lathes, planers, slotting and milling machines, drill presses and other tools are provided for the varied uses of the boys in the performance of the work in hand. A fully equipped tool room is maintained, and a steam test table is provided for the testing of engines, &c., built by those undergoing instruction in this department.

The plumbing department, although less than five years old, is thoroughly equipped with all the appliances for teaching practical and sanitary plumbing. It has a gallery divided into three sections, each representing the kitchen and bathroom of a small dwelling house. These have been fitted up by the more advanced pupils with the usual plumbing fixtures. One division represents a modern city kitchen and bathroom, with water coming from the street main. The second division represents a country kitchen and bathroom, with the water supply coming from a well or cistern, a pump conveying the water to a tank on the third floor. Stationary washtubs and piping for hot and cold water are also supplied. The third division represents a house that has never had hot or cold water, and in which the boys are instructed to pipe and fit, with the least damage to the wood work, joists, &c. The boys are instructed how to put a water back in a range, set a boiler and pipe a house for hot and cold water. Among the things made by the pupils in this department are a siphon basin, a hydraulic ram and an overshot wheel.

In the department of electrical mechanics the work has kept pace with this rapidly advancing science. It is equipped with all the latest and best apparatus and appliances. One of the features in this department is a working model of an electric street railway or trolley system, complete in every detail and containing about 150,000 pieces. There are also complete models for demonstrating the construction of arc lamps, both open and inclosed; complete models for demonstrating the making of incandescent lamps and the telephone, and the construction and operation of the electric motor and dynamo.

In the blacksmithing department the boys are instructed in all branches of the art—welding, forging, tempering and the manufacture of various tools commonly used.

The foundry department is situated in a separate building, especially designed for its purpose and complete in every detail. It is equipped with sand tubs and arranged for classes of 24 boys each. A core room is located at one end of the building and arranged the same as the foundry. It is here that the boys are taught the rudiments of molding, beginning with simple straight cores and advancing to the more complex ones. They learn here the use of molders' tools and the care necessary for good workmanship. They advance from this department to green sand molding, bench work alone being performed, and, beginning with simple forms, progress to more difficult ones—three-part flask work and artistic molding for brass and white metal castings.

Metal is poured every working day, the older boys pouring their own work. Heats are made in either gray iron, brass or white metal, which are melted in crucibles (two-pot fires being used), or in a cupola which is located at one end of the shop. The cupola is of modern design, lining up to 20 inches, inside diameter. An overhead trolley system provides the means of conveying crucibles to the molds or metal from the cupola. Core ovens, emery wheels, rattling barrels, &c., are also provided, the power for these and for the blowers being furnished by electricity supplied from a general station. The character of work done in this department is high; all the smaller castings for various uses in the other departments are made, as well as the castings which the boys machine and finish for the construction of their particular work in hand.

The whole enrollment of boys, something over 1500, are taken through all of the before mentioned departments, the classes consisting of from 20 to 24 boys, and a period of two hours a week is given to each branch, and the class of work finished is highly commendable to both pupils and instructors.

The United States Tube Company.—Ten acres of land, bounded by Amherst street on the north, Clyde street on the east, Kensington avenue on the south and the tracks of the Lackawanna Railroad on the west, have been purchased by the United States Tube Company, a West Virginia corporation, with a capital of $1,000,000, that is to locate in Buffalo. Harvey K. Flagler of Boston is president of the company, and he has said ground would be broken in ten days and the factory in operation in six months. The company will manufacture lap welded steel and iron boiler tubes for locomotives, marine, tubular and stationary boilers; lap welded steam, gas and water pipe; oil well tubing, casing, pipe lines and structural steel tubes. Present plans call for a daily output of 100 tons of steel tubes, but the company expect to increase their output until it has reached 400 or 500 tons a day, which would give employment to 4000 or 5000 men. The main building will be 300 x 80 feet at the foundations and one story high. There will be engine and boiler houses, storehouses and gas houses, for the company will make their own gas for heating and welding. It is understood that the Lackawanna Iron & Steel Company will furnish the tube company with steel billets from which the pipe and tube are to be manufactured. The principal capital interested is New York and Boston.

It is understood that the death of Capt. McManus may result in the abandonment of the scheme which he had in hand for the establishment of another tube works at Chester, Pa.

The Pennsylvania Railroad's Spring Plant at Altoona.

Through the courtesy of the *Railroad Gazette* we are enabled to present the following admirable description of the spring plant of the Pennsylvania Railroad at Altoona:

A number of years ago the Pennsylvania Railroad began to make the elliptic springs used on its cars and locomotives. The plant was small and to a certain extent experimental, but the success of its operation and the quality of the springs made was so satisfactory that it has been continued and enlarged, and is now one of the permanent departments of the shops. Before the organization of this shop the officers of the motive power department made a careful study of the action of springs, and had a series of tests made at the Watertown Arsenal with a view to establishing the accuracy of the Reuleaux formula. This done, it remained to specify the quality of steel to be used, and the calculated properties of any spring could be realized in manufacture.

As spring making on a large scale is not a widespread industry, and as most of the large manufacturers are using machinery of their own design, that is not on the market, it became necessary to build special machinery. Through courtesy of the officers in charge, we now give engravings of the several machines that are in use, together with a description of their operation. No helical springs are made in the plant, the work being confined to making and repairing elliptic springs for passenger cars and locomotives on the lines east of Pittsburgh. A few springs are sent West.

The plant is in a one-room wing of the blacksmith shop. All work, from the shearing of the plates to the banding and testing of the springs, is done there. The first machine used is a heavy combination shear and punch, by which the plates are cut to the proper length. This machine was designed and built at Altoona, and will be described later. After the plates have been cut to length they are placed in one side of a double-sided oil furnace, where they are first heated at the center. They are then taken to a nibbing machine. The nib-

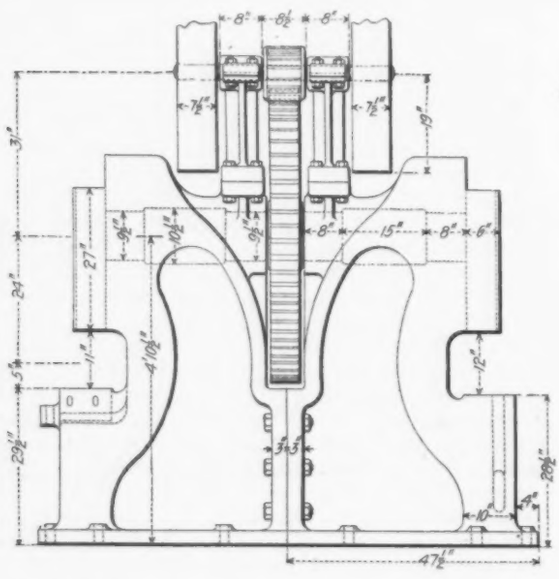


Fig. 1.—Combined Punching and Shearing Machine.

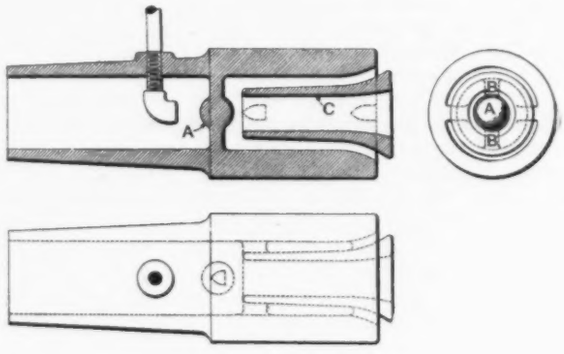


Fig. 2.—Walton Rees Oil Burner.

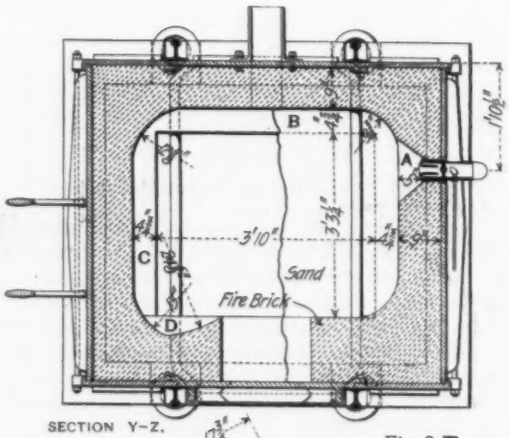


Fig. 3.

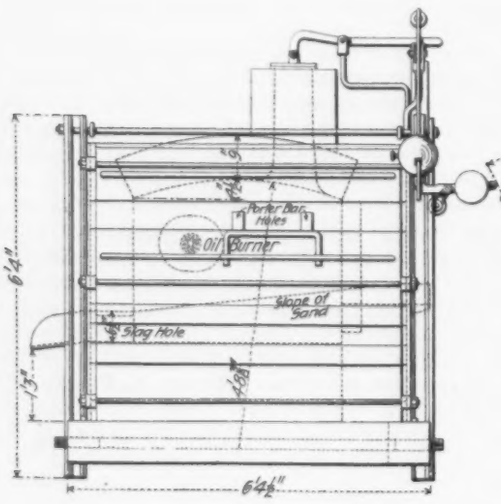


Fig. 5. *Oil Furnace.*

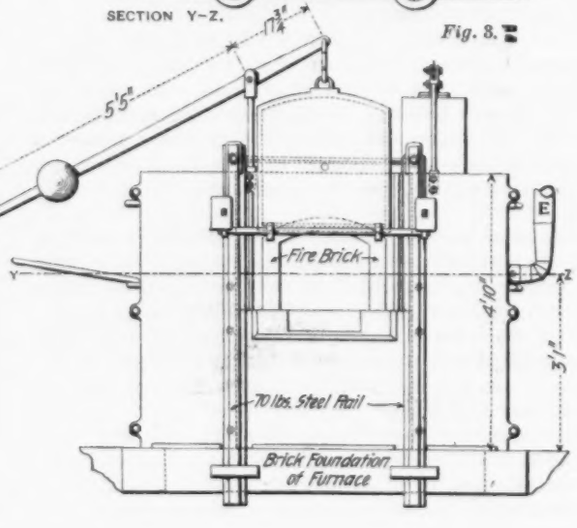


Fig. 4.

THE PENNSYLVANIA RAILROAD'S SPRING PLANT AT ALTOONA.

consists of a small projection upon one side of the plate, at the center of its length and breadth, with a corresponding depression on the other side, by means of which the consecutive plates of a spring are held in their proper

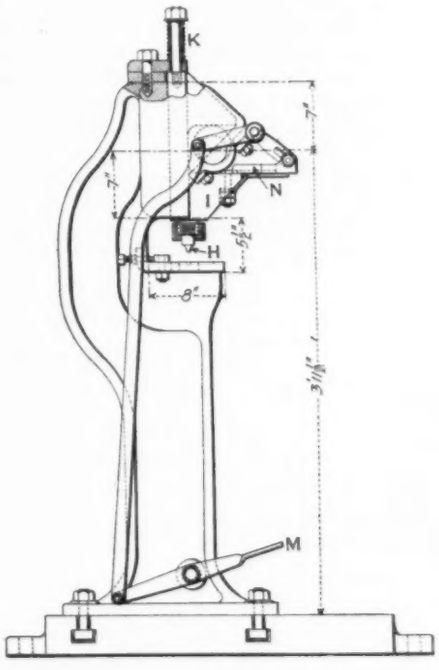


Fig. 6a.—End View Fig. 6.

heated. When the plates have been so treated they are ready for shaping to the proper camber. For this purpose they are again heated, this time throughout their whole length, and rolled to the proper camber in the cambering machine. A template is used for the shaping of the master leaf only, which is then used as the template for the forming of the next leaf, a process that is repeated for each successive heat.

As soon as the leaves are rolled to shape, and while they are still red hot, they are dropped into a tank of oil for hardening. In one end of a large heating furnace there is a space separated from the main heating chamber by a brick bridge wall, which is kept at a uniform temperature and in which the plates are placed for an annealing heat. The temper obtained in the oil bath is here drawn. When the temper has been drawn the leaves are fitted over each other, and each spring is built up separately. The tempering and annealing of the plates naturally warp them slightly, so that some straightening is required for each one. This is done by a few blows of a hammer delivered either directly upon the plate or through a flatter, using a heavy surface plate as an anvil. The spring is now ready for banding.

The bands are turned and welded by hand, and are then heated and slipped over the spring, the plates of which are clamped in position. The bands are tightened and shaped to the spring by a hydraulic press, having two plungers which are brought to bear against one side and the bottom of the band, squeezing it against the leaves and conforming it to their sectional contour. The cooling of the band tightens it in position by the natural shrinkage, and the spring is then ready for the testing machine. Each spring is tested under the load that it is intended to carry and a record made of its deflection.

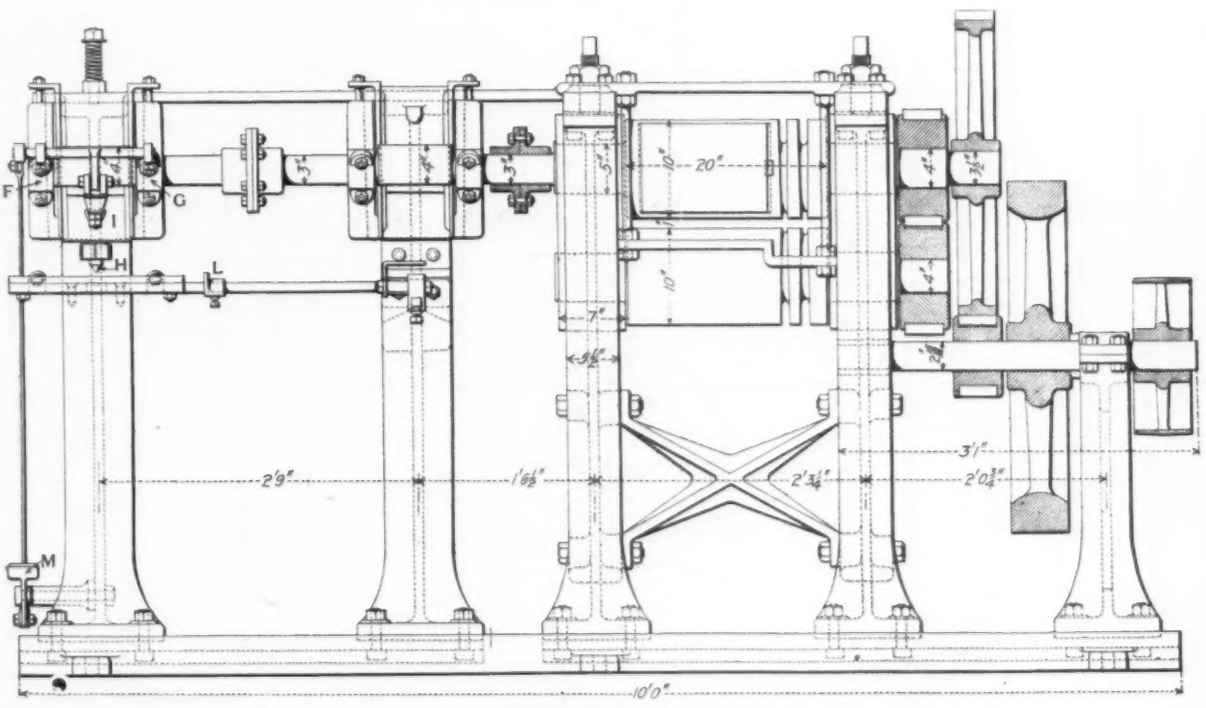


Fig. 6.—Nibbing, Rolling and Shearing Machine.

THE PENNSYLVANIA RAILROAD'S SPRING PLANT AT ALTOONA.

relative positions and prevented from slipping over each other.

From the nibbing machine the plates are carried back to the furnace, and are heated at the ends. They are then returned to the same machine and are tapered at the ends. The tapering is done by first upsetting on the edges and then drawing the ends out again to the full width of the plate. This drawing slightly increases the length of the plates. While they are still hot they are cut to the proper length by a shear on the nibbing machine, using the nib for the point of measurement. One end of the plate is allowed to cool before the other is

If this deflection falls within the prescribed limits of variation the spring is passed, and, after being painted, is sent to storage. The painting is done by a spraying machine.

In the making of each class of spring there is a certain amount of extra work to be done on the master leaf. It is either the slotting of the end to permit the passage of the hanger, the welding on of pads for holding hanger keys in place or the bending of the ends for the joining of the two sections of the elliptic. The first item of this work is done on the combined punching and shearing machine, already alluded to; the others are done by

hand by the blacksmith, no attempt having been made to use a machine for curving the ends, as in the case of the regular makers, where the output is much larger than at Altoona. As in the other shops and departments at Altoona and elsewhere on the Pennsylvania, all is piece work, and is subjected to a rigid inspection.

The process of making elliptic and semi-elliptic springs

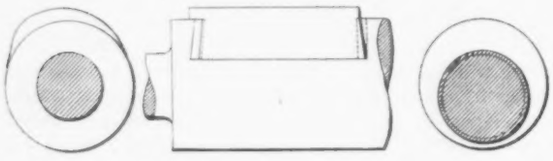


Fig. 7.– Roll for Tapering Spring Leaves

One hydraulic testing machine.
One hydraulic spring stripping machine.
One air hoist for finished work.
One air paint spraying machine.

The first of these machines, the combined punch and shears, is very powerful, and is shown in front elevation in Fig. 1. The frame of the machine, it may be seen, is formed of two castings bolted together, below the gap for the center driving gear, by three 1½-inch bolts on each side. The eccentric shaft is 9½ inches in diameter, with pins on the ends, for moving the cutter heads, 6½ inches diameter, set 1½ inches eccentric, whereby a motion of 3 inches is imparted to the heads. The gaps of the machine are quite small, because only narrow material is to be cut or punched and a great depth is not needed. The diameter of the driving pinion is 8 inches

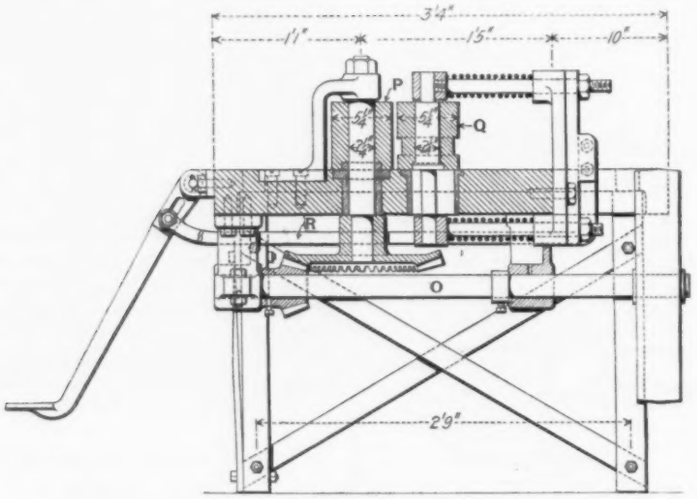


Fig. 8.– Section Cambering Machine.

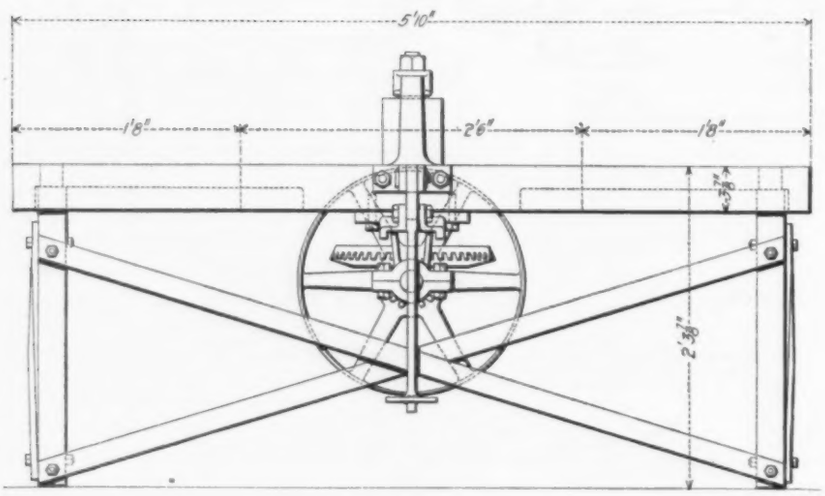


Fig. 9 – Cambering Machine.

THE PENNSYLVANIA RAILROAD'S SPRING PLANT AT ALTOONA.

will thus seem in outline to be a very simple one, but skilled workmen must be employed to meet the requirements, and special machinery is needed that the cost may be kept down. The machinery and tools in use in the plant consist of:

One combined punch and shears.
Two combined nibbing, rolling and shearing machines.
Six oil furnaces for heating plates and bands.
Two machines for spring forming or cambering.
Four iron tanks for tempering fluids.
Two tables for spring fitters.
One hydraulic spring banding machine.

and that of the gear 54 inches, with a common face of 6 inches.

All heating is done in oil furnaces built upon the same general plan, but varied in detail to meet the requirements of the special work that is to be done. The furnace in which the heating for nibbing and rolling the taper on the ends of the leaves is done is double, with access to the interior from each side. The one in which the leaves are heated prior to cambering and tempering is larger than the others, and has a bridge wall built across it as some distance from one end, and arranged so that heat enough will cross over to draw the temper on the leaves after they have been hardened. The

Walton Rees oil burners, shown in Fig. 2, are used. These burners were invented in the department. Oil is led into them under a pressure of about 6 pounds per square inch, through a 1⅛-inch pipe, having an ordinary right angled elbow on the inner end. The oil, issuing from the pipe, strikes against the ball A, by which it is broken into a spray, and is then caught by the blast and carried into the furnace. The blast is furnished by an ordinary fan, the pressure being 6 ounces. The ball A is held by two wedge shaped arms, B, and set at right angles to them are two of a similar shape for carrying the bell shaped nozzle C, by which the oil is thrown into the furnace in the form of an annular jet. The burner is set just inside the casing of the furnace and well back from the working face of the brick work, as shown in Fig. 3. From the mouth of the burner the brick work is cut out in a flare so as not to interfere in any way with the effective spraying of the oil. The metal of the burner is so well shielded from the heated surfaces of the brick that it is protected against melting.

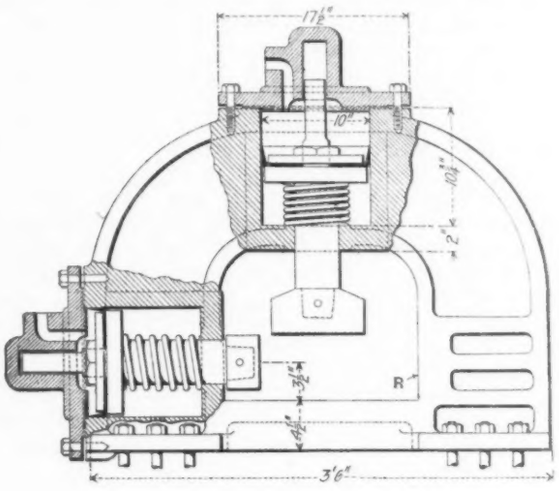


Fig. 10.—Hydraulic Band Press.

The double sided open furnaces, for heating the leaves, have no doors, and the area over which the metal is subjected to the action of the flame is quite limited, since but a small portion of the plate is to be heated at any one time. The other furnaces have doors, and have the interior so constructed and the burner so located that the natural course of the flame is from the burner, around the fire box, close to the wall, and out at the vent. This is shown in the sectional plan of the heating furnace, Fig. 3. The combined jet of oil and air issues from the burner at A and follows along the walls B and C until it strikes the pocket D in the front wall near the door. There it is turned in toward the center, thus creating a swirl over the whole area of the fire box, and, at the same time, protecting the door from the escape of the flame.

The front door is of the ordinary sliding type, with a counter balanced lever for raising and lowering. On the side opposite the burner there are two holes 2½ inches wide by 4 inches high for porter bars, and these holes are also so set that the flame sweeps across their front face, with little or no tendency to escape. The brick lining is 9 inches thick, with well rounded corners, and the whole is held in position by a metal casing strengthened by buck stays that are made of old steel rails and tied together with ¾-inch bolts. Fig. 4 is a front elevation showing the arrangement of the door and the blast pipe E. Fig. 5 is a side elevation in which is shown the location of the holes for the porter bars, the arch of the roof, the slope of the floor and the position of the slag holes.

The nibbing, rolling and shearing machine is shown in front and end elevations in Fig. 6. It really includes three distinct machines, the main shaft of which is carried on four standards. At the extreme left is the nibbing device. The shaft runs continuously at a speed of 60 revolutions per minute, and at this point is carried by the boxes F and G. The nibbing punch H is held by a screw cap to the head I, which has an open jaw on the front face, in which the eccentric on the shaft turns. When not in use the head is held to the extreme upward position of its travel by a spring, K, acting against the under side of a nut on a stud screwed into the head. The shaft is thus free to revolve and the eccentric is clear of any contact with the metal of the jaws, so that there can be no wear. When a plate has been heated and the end placed against the stop L, the operator presses down upon the treadle M, thus, through the combination of levers shown in the end elevation, pushing the contact plate N beneath the eccentric, which then drives the nibbing punch downward.

The rolls for tapering the ends of the leaves are to the right of the machine. They consist of two rolls, each 10 inches in diameter. To one side of each of these rolls a cam is fastened, which has a thickness of ¾ inch, and comes down on the sides of the rolls to within 2 inches of the center; this is shown in Fig. 7. At the right hand

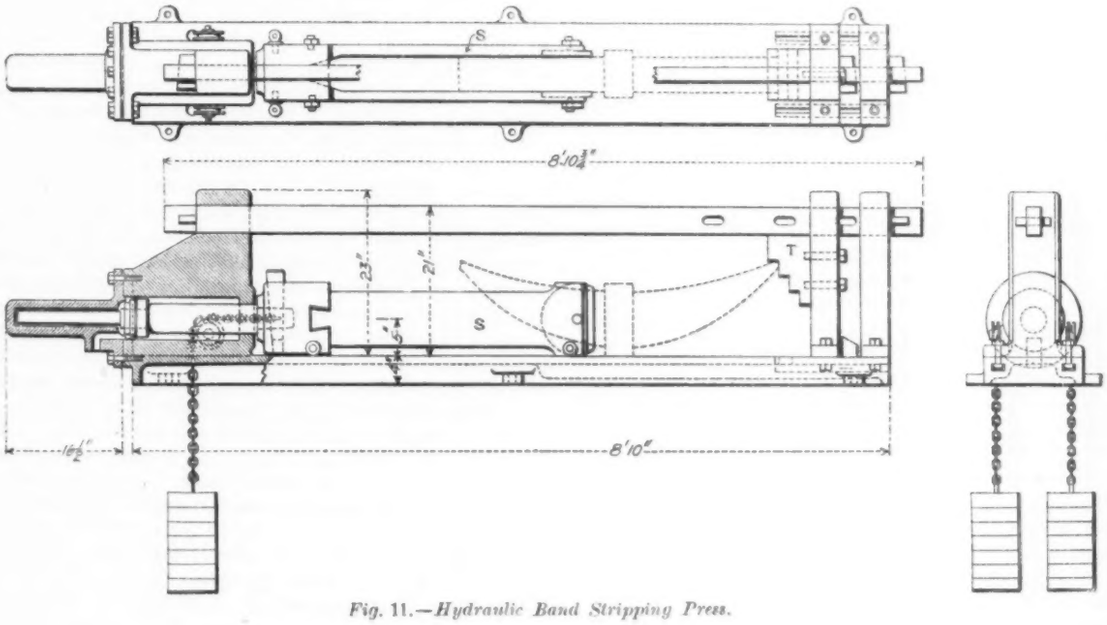


Fig. 11.—Hydraulic Band Stripping Press.

THE PENNSYLVANIA RAILROAD'S SPRING PLANT AT ALTOONA.

ends of the rolls two eccentric grooves are cut, the shapes of which are also shown in Fig. 7. The grooves are used to upset the end of the leaf so that when rolled on the flat it will be drawn out to the normal width of the plate. The dimensions of the grooves are such that one or the other will cover the whole range of work.

The operation is simple. The rolls revolve so as to deliver material toward the operator, who stands in front of the machine. Receiving a leaf with a heated end from the furnace, it is first thrust edgewise between the rolls in the eccentric grooves, until it is caught and thrown out. As this is done the approaching surfaces catch it and upset it. The leaf is then placed between the rolls and given the flat taper at the end. It may be noticed that the cam is placed upon the upper roll only. The face of the leaf that rests against the lower roll is, therefore, left straight. The shearing cutter is driven by an eccentric working in an open jaw as in the case of a nibbing machine, but without the sliding contact plate by which it can be stopped and started. The machine is driven by a 6-inch belt on a 16-inch pulley, keyed to a shaft upon which there are a 36-inch fly wheel and a 7⅛-inch pinion, the latter meshing with a 32½-inch gear on the main shaft. The lower roll is driven by gearing, as shown in the front elevation.

The cambering machine, Figs. 8 and 9, is driven from a 4-inch pulley, keyed to the shaft O, making 80 revolutions a minute. Through a pinion and bevel gear the vertical roller P is kept in constant motion. A secondary roller, Q, faces the first, and is forced out toward it by two springs. The master leaf is shaped to a template. The ends are held together and the rolls separated by the treadle and connection R. This moves to the right and permits the leaf and template to be inserted between the rolls. The pressure of the springs when the thrust of the treadle is removed bends the leaf to the shape of the template. The table over which the work is moved has a total length of 5 feet 10 inches, or 2 feet 11 inches on each side of the center of the rolls, so that the leaf and template are supported throughout their whole length during their travel through the rolls, thus avoiding bending or crimping.

The tanks in which the tempering is done are ordinary steel tanks, with double sides and bottom. The space between the inner and outer walls is kept filled with water in constant circulation. This cools the crude oil contained in the interior and holds it at a constant suitable temperature. After annealing the springs are straightened on the fitters' tables, and the several leaves of each spring are brought together. These tables are heavy blocks of cast iron with a sloping pocket at one corner.

The hydraulic band press is shown in Fig. 10. It consists of a heavy frame carrying two hydraulic cylinders, set at right angles to each other, one being vertical and the other horizontal. The two cylinders have each a working diameter of 10 inches and a stroke of 3 inches. Beneath each piston there is a powerful spring, thus insuring a quick return as soon as the pressure is relieved. The piping and valves are so arranged that the two pistons can be operated in unison or separately.

The mode of operation is to hold the leaves of the spring in position with a clamp and slip the heated band in position. The clamp is then removed and the whole put into the press, the top face of the band resting against blocking that has a bearing against the face of frame R. The two pistons with their attached rams are then forced against the band, upsetting it and tightening it against the leaves of the spring. This machine, while built at Altoona, does not differ from those used for a similar purpose by other spring makers, but is almost identical in the general design with those to be found elsewhere. With this exception, all of the machinery in the plant is peculiar to this establishment and differs in all of its essential features from that in other establishments.

The spring testing machine is of the ordinary type and does not differ from other machines in common use. The last machine belonging strictly to the spring making department is the stripping machine, shown in Fig. 11. This is a hydraulic press arranged to strip the old bands from springs that have been sent in for repairs. There is a cylinder 6 inches in diameter, at the left, the plunger of which is fitted with a U-shaped thrust bar, S, the ends of which are prevented from spreading by a bolt, and which is brought to a bearing against the band of the spring. The end of the spring abuts against the stop T, which is notched to accommodate the different hights to be operated upon. The tail piece can be adjusted to the length of spring that is to be stripped by means of the keys in the upper and lower tension bars. The spring is placed in the machine, in the position indicated by the dotted lines of the engraving, and when the water pressure is admitted to the cylinder the U-piece pushes the band off. The ram is drawn back by the weight attached to a chain, as shown.

The air hoist is of the ordinary type, hung from a trolley, and designed to lift and carry the comparatively light weights handled in the department. The paint spraying machine is also one that is familiar to all and deserves no special notice.

From this review of the Altoona spring plant it will be seen by those who are familiar with the industry that the machinery and methods employed are those of a thoroughly efficient manufactory. Indeed, it is necessary that they should be so, in order to meet the competition of the regular makers. The officials find that they can make and repair cheaper than they can buy.

The Monongahela River Consolidated Coal & Coke Company.—The stockholders of the Monongahela River Consolidated Coal & Coke Company held their annual meeting in Pittsburgh last week. J. B. Finley, president of the company, read his report, closing with the fiscal year on October 31 last. The report included the following statement: "Resources—Cash on hand and in banks, $269,235.32; accounts and bills receivable, $1,442,742.69; coal on hand, $1,576,405.56; supplies on hand, $326,678.98; office furniture, $10,735.65; stocks of other corporations, $262,050; investments, $38,151,309.42; total, $42,039,157.62. Liabilities—Preferred stock, $9,915,000; common stock, $20,000,000; bonds, $9,479,000; current debt, $2,149,471; undivided profits, $495,686.62; total, $42,039,157.62." In presenting the report the president outlined the policy of the company by stating that in the future all land owned by the company from which the coal had been mined would be replaced by new land. It would not be the policy of the company to buy large tracts of coal land, but the acreage would not be allowed to decrease. At present the company have 200 more acres than last year. In addition all land from which coal had been taken during the year had been replaced. Out of the sinking fund the company have bought in $184,000 worth of bonds. The election of directors resulted as follows: H. C. Fownes, George I. Whitney, Samuel S. Brown, A. Jutte, William B. Rodgers, Hugh Moren, George W. Theis, O. A. Blackburn and J. B. Finley.

The Norway Iron & Steel Company.—The annual meeting of the Norway Iron & Steel Company of York, Pa., was held in the company's offices on January 22, 1901. Hon. W. F. Bay Stewart, Charles James, J. W. Steacy, D. F. Lafean, Jno. McCoy, John Q. Denny and H. H. Weber were elected directors, after which the following officers were chosen: President, Hon. W. F. Bay Stewart; vice-president and general manager, Charles James; secretary, H. H. Weber; treasurer, J. M. Smyser. The Executive Committee is composed of Hon. W. F. Bay Stewart, J. W. Steacy and H. H. Weber. The Norway Iron & Steel Company are now ready for active operation and will shortly be run on full time. Inquiries are numerous and a number of orders have been taken for February and March delivery. Over 200 men will be employed by this company when the plant is running to its full capacity.

The imports of merchandise into the United States during December, 1900, amounted in value to $68,600,000, as against $70,733,000 in December, 1899. The exports reached $144,197,500, as compared with $121,395,000 in the corresponding month of the previous year.

Watertown Arsenal Tests of Metals.

The report for the fiscal year ending June 30, 1899, has recently been published by the Ordnance Department, United States Army. This volume, of 900 pages and the nineteenth of the series, contains the results of tests of ordnance material and constructive material of a general and investigative character.

The ordnance tests represent material examined in the ordinary course of routine work on the properties of forged steel, steel castings and cast iron used in the fabrication of small arms, field, siege and seacoast guns and mortars, and for their carriages and mounts.

In the larger caliber guns the tensile properties of the tubes and jackets are as follows: Elastic limits from 45,000 to 55,000 pounds per square inch, tensile strength ranging from 85,000 to 95,000 pounds, with an elongation after fracture of 20 per cent. and contraction of area 40 per cent. or more, measured on a specimen 3 inches long.

For small arms, the barrel steels have an elastic limit generally above 70,000 pounds, with the tensile strength ranging from 110,000 to 120,000 pounds per square inch. The fractures of these specimens were commonly silky in appearance, developing good elongation and contraction of area. In this group of tests is found a special tungsten steel, having an elastic limit of 101,000 pounds and tensile strength 125,500 pounds, the elongation being 19 per cent. and contraction of area 34 per cent. This steel contained 1.94 per cent. of tungsten and 0.72 carbon. Steel castings used in the mounts of 6-pounder and 15-pounder guns had a tensile strength of from 60,000 to 70,000 pounds.

Internal strains in gun forgings were investigated. The tubes of 5-inch rapid fire guns were treated for the purpose of introducing strains in the metal in the following manner: The tubes were heated to a temperature of 800 to 975 degrees F., and then rapidly cooled by a stream of water passing through the bore. This treatment results in putting the metal in a state of compression at the bore, with the outside in a corresponding state of initial tension. The compressive stress at the bore in one case is reported as 40,000 pounds per square inch. Annealing relieves these internal strains, and exposure to a temperature of 1000 degrees F. reduced the value of the internal stress from 26,200 to 5500 pounds per square inch. A rearrangement of the internal strains occurred when the dimensions of the forging were changed, some of the metal being turned off.

Cartridge brass, in sheets about ⅛ inch thickness, showed an elastic limit of 16,000 pounds, a tensile strength of 46,000 ponds, with the exceptional elongation of 60 per cent. on a 10-inch section. The composition of this metal was: copper 70, zinc 30.

Compression tests on mortar and concrete occupy 128 pages of the report. The mixtures ranged from a concrete consisting of 1 part neat cement and 2 parts broken stone to the lean mixture of 1 part cement, 6 sand and 12 stone. Different ages of setting were given the material. Mixtures were prepared in which there was a deficiency or excess of mortar with reference to the voids in the stone. There were mortars which were kept in a state of agitation for several hours after mixing and before being finally tamped into the molds and allowed to finish their setting without being further disturbed.

The strongest concrete tested was the neat cement and broken stone mixture, with no sand present, the strength diminishing as the leaner mixtures were reached. At the end of six months the strength of the several mixtures, 1 : 0 : 2, 1 : 2 : 4, 1 : 3 : 6 and 1 : 6 : 12 stood to each other as 100, 68, 57, 25, in the case of some concretes made of Alsen's Portland cement. The crushing strength of the 1 : 0 : 2 mixture was 5330 pounds per square inch.

Concrete cubes loaded on a part of the surface, taken equidistant from each edge, showed higher strength per square inch on this reduced section than displayed by a corresponding cube loaded over the entire surface. A cube loaded over two-thirds of the end surface showed a crushing strength of 6651 pounds per square inch. Making a comparison of surfaces differing in extent, the greater strength was shown by the specimen loaded on the smaller area, pressures per square inch being considered as before.

The elastic properties of mortars and concretes were also investigated. The compressibility was observed as the loads were applied and the resilience determined as they were released. The values of the moduli of elasticity ranged from 1,500,000 to 3,500,000 pounds per square inch, occasional results being found outside of these limits. Cubes of the greatest strength were the most rigid under load.

On the effect of retarded setting, a mortar composed of 1 part Portland cement, 2 parts sand, mixed and immediately put into the molds, had a crushing strength of 2750 pounds, whereas the same mortar kept in a state of agitation for a period of five and one-half hours before putting into the molds had a strength of 2245 pounds, showing a loss of 18.4 per cent. The specimens were 62 days old at the time of testing.

Portland cements, neat, were shown to acquire a decided rise of temperature when made into large cubes, reaching this higher temperature a number of hours after mixing. Thus the temperature of a 12-inch cube mixed with 17 per cent. of water rose to 200 degrees F. nine and one-half hours after mixing. During the first five hours the temperature rose slowly, after which the rise was more rapid until the maximum was reached, followed by a slow fall until the temperature of the room was reached. When more water was used in mixing there was a slower approach to the crest and the maximum was somewhat lowered. Smaller cubes were less affected, a 6-inch cube only reaching 90 degrees, the initial temperature being 72 degrees F.

Referring to the test by repeated stresses, the report states that interest centers on the endurance of steels subjected to a maximum fiber stress in the vicinity of 40,000 pounds per square inch, earlier tests having shown that many steels of high tensile properties were unable to endure repeated stresses of this magnitude without early rupture. A test is now given in which a bar of 0.82 carbon steel has endured 65,000,000 repetitions of 40,000 pounds per square inch, alternate tension and compression, without rupture. The test was made on a shaft loaded transversely, the outside fibers of which were subjected to the load mentioned.

Tests by impact are reported on soft metals, lead, tin, zinc and copper. Lead was regarded as peculiarly well adapted for preliminary tests of this class. Owing to its low elastic limit and great malleability the permanent deformation of the metal can be taken as an index of the effect of impact. The experiments showed increased resistance to flow of the metal as the striking velocities of the ram increased. The cumulative effect of a number of short blows was greater than the effect of a single blow from a hight equal to the aggregate of the short blows. Eighteen blows of a ram from a hight of 2 inches each caused the same permanent deformation to a lead cylinder as one blow of the same ram from a hight of 56 inches.

The results on lead were influenced by the crystalline structure of the metal. Samples from the pig, compressed in a direction normal to the axes of the crystals, flowed most in the direction of their length. A cylindrical specimen, originally 1 inch diameter, assumed after impact an elliptical shape in cross section, measuring 2.09 inches diameter lengthwise the crystals, but expanded only to 1.07 inches in a crosswise direction.

Additional upsetting of the lead after a period of rest developed the remarkable tendency of the metal to renew flow in the opposite or crosswise direction as the principal direction of radial movement. There was further shown an appreciable gain in rigidity against flow, the result of a succession of blows of the ram, and from which the lead recovered during an interval of rest.

Tin and zinc flowed most in the crosswise direction, but with a less pronounced difference in rate than displayed by the lead.

The Philadelphia Trades League has adopted a resolution urging the passage of Senate Bill No. 738, provid-

ing for the creation of a new national department, to be known as the Department of Commerce and Industries. It was shown that similar departments in foreign countries were among the most important branches of the governments.

The Kernohan Steel Process.

BY R. B. KERNOHAN, PITTSBURGH, PA.

In his discussion of the duplex process, H. H. Campbell makes the following statements:

"Theoretically, nothing is more attractive than a plant with a blast furnace to produce the pig iron, a converter to desiliconize and partially decarbonize it, and an open hearth to finish it into steel. Unfortunately, practical difficulties limit the applicability of this plan. A few of them may be summarized as follows:

"*a*. When the blast furnace is making sulphurous iron the entire steel plant has to be stopped. This may be obviated by having several blast furnaces and a mixer. The use of cupolas allows the selection of the pig iron, but entails considerable additional expense.

"*b*. The converter, to be worked economically, must be run conitnuously in order to pay for the large investment in hydraulic machinery, blowing engines, bottom making and drying establishment, and the other incidentals of a Bessemer plant.

"*c*. If the converter is small, several heats will be necessary to make one open hearth charge of reasonable size. A furnace should have a capacity of at least 15 tons, while a converter of that size is part of an expensive plant. If three or four converter heats are necessary to make one open hearth charge, and if only one vessel is used, it is evident that more than an hour will be required to blow the necessary metal and allow time for pouring and recharging. This fact and the trouble caused by changing bottoms during the preparation of a furnace charge make a second vessel very desirable.

"*d*. The waste is augmented by this duplex system. In the ordinary methods of open hearth work there is a reduction of the iron contained in the ore, and this helps to make good the loss in weight due to the burning of silicon and carbon. When these elements are oxidized in a converter they represent a total loss. Furthermore, a considerable amount of metal is projected from the vessel mouth in the form of sparks, and more shot is contained in the viscous converter slag than in open hearth cinder. Ordinary Bessemer practice shows a loss of 10 per cent. It is doubtful if this would be materially lessened by stopping the blow (for the duplex system) when the metal contained 1 per cent. of carbon, for most of the material ejected from the mouth of the vessel is losf during the combustion of the first portions of carbon. The loss in shot also would be fully as great, since the slag would be even more viscous and the only gain would be the actual carbon content. If no carbon be removed in the converter, the duration of the heat in the open hearth furnace will be nearly as long, and the work nearly as costly, as though the metal had not been blown at all. On the other hand, if carbon be entirely eliminated there will be difficulty in producing a slag in the hearth, and it is impossible to prepare the charge properly unless a suitable cinder covers the metal. In basic practice the metal must be allowed to remain in the furnace long enough for the removal of phosphorus. With a moderate percentage of this impurity present, there should be at least 1 per cent. of carbon also, so as to afford sufficient time for the production and action of a good slag.

"*e*. It is quite possible to eliminate all the silicon in the converter, but with the use of direct metal from the blast furnace, and a demand for a hot product to avoid skulls, and with the stopping of the below before all the carbon is burned, the silicon would often exceed ½ per cent. in the blown metal. This in itself would not be disastrous, but it would trespass seriously upon the clear ground of theory and would reduce the value of the work done in the converter.

"*f*. In combination with a basic open hearth furnace the desiliconizing of a phosphoric iron in an acid converter is very advantageous, as the basic hearth is thus relieved of the element which produces most of the scorification and is the cause of most of the lime additions. The installation of the duplex process in such a case would do away with the demand for low silicon pig iron, and so improve the chances for the elimination of sulphur in the blast furnace."

Assuming that the above deductions of Mr. Campbell constitute a fair statement of the case, it is evident that the difficulties of a duplex process lie in the cost of installation, operation and maintenance of the modern Bessemer plant, and in the fixed weight of its heat. The method herein presented is intended to overcome some of these troubles.

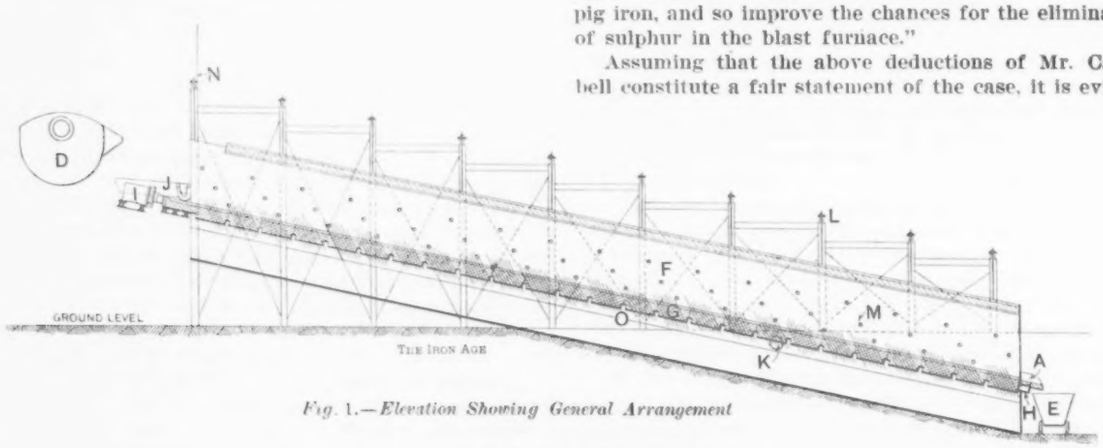


Fig. 1.—Elevation Showing General Arrangement

THE KERNOHAN STEEL PROCESS.

The New Method.

Referring to the accompanying drawings, Fig. 1, D, represents a mixer; E, a ladle; F, what might be termed a converter, or preferably a "reducer." A section of the latter is shown in Fig. 4, where O is a wind box; G, Fig. 1, a bottom, with tuyeres, P, Fig. 4. The upper chamber of F is lined with mica schist, S, or other suitable refractory, the walls being held in place by water cooled separators, M. The bottom G is made in sections of a size suitable for handling. Each section contains the central trough where are placed in an inclined position the single hole tuyeres P, the ends as well as the middle portion being made of shaped tiles, Q, Figs. 2 and 3. The remaining part, R, is rammed in place as in converter bottoms and then dried.

The upper chamber lining S being put in with spaces at intervals, no linear expansion will result from high temperatures. The bottoms G as they expand are held, end to end, under a uniform pressure by the hydraulic ram I acting against the stop H. The vertical pressure on the bottoms G is carried by the wheel W.

The operation is as follows: A stream of molten pig iron is slowly poured from the mixer. It flows down the runner J into the reducer F, where it meets the columns of air ascending through the tuyeres P under a pressure of about 10 pounds per square inch, the body of metal in the trough being perhaps 3 inches deep. As the metal descends, through the reducer F it is blown

as in a Bessemer converter, the time required to reach the lower end of the reducer F being determined by the pressure of the blast. The greater the pressure the greater the resistance offered to the metal's descent and the longer the blow. (From the practice at Witkowitz, and the experiments being conducted at the works of Bolckow, Vaughan & Co., it would seem that this period should be from five to six minutes, on an average.)

The metal reaches the runner A, flows into the ladle E, and is transferred to a basic open hearth furnace where the decarbonization is completed, and where it is also dephosphorized and finished into basic steel in the usual manner. Of course low phosphorus iron could be finished on an acid hearth.

The process in the reducer F need not be stopped while shifting ladles at the lower end. A dam might be thrown into the runner A during that brief period, and might be as easily removed when the next ladle was in position. In this way little time need be lost at the open hearth waiting for metal.

At the works of Bolckow, Vaughan & Co. as many as 28 heats in one week have been taken out of an open hearth furnace and used in connection with a Bessemer works (and this from a furnace usually yielding but nine heats per week), while during this period one and one-half hours were lost on each heat waiting for metal.

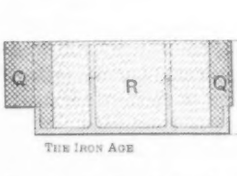


Fig. 2.—Section Z Z of Fig. 4.

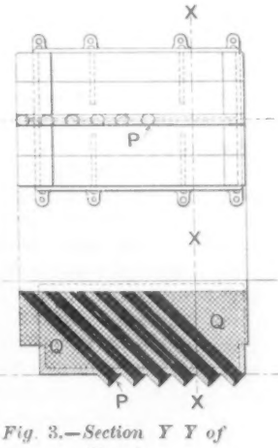


Fig. 3.—Section Y Y of Fig. 4.

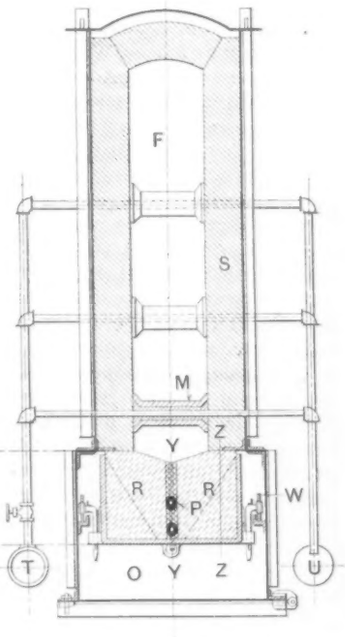


Fig. 4.—Section X X of Fig. 3.

THE KERNOHAN STEEL PROCESS.

The saving of this time would bring the output of the furnace up to about 40 heats per week, which is fully three times the output of the present open hearth practice running wholly on pig iron.

The cost of installation of such a plant would be much less than that of a Bessemer works. The blowing engines could be small, as the pressure required would be less than half that used in a converter. The cost of maintenance would be less, as there is no machinery moving under heavy loads. The bottom repairs should scarcely be as great as in the Bessemer practice per ton of output. At Witkowitz the bottoms lasted over a hundred blows.

The upper sections of bottom in the reducer F would surely withstand much usage, while those near the lower end could be changed quickly, and it is scarcely possible the formation of pools of metal would be a serious drawback. The labor required would be but a fraction of that demanded by the Bessemer process. The blowing need not be accurate, as there would be ample opportunity to test samples of the metal before it was poured into the open hearth.

If it were not possible to have two reducers an arrangement could be made for taking metal directly from the mixer to the open hearth furnace, in case of a break down or when repairing the bottom. Of course the arrangement shown need not be followed literally. The pig iron could be hoisted in ladles to the top of the reducer, the lower end of which might be on the yard level. It might even be desirable to run the metal directly from the reducer into the open hearth. If it was found that sufficient heat was not developed in the reducer to take care of radiation, a gas flue could be connected near the lower end, permitting the flame to pass up through the chamber in F. Such an arrangement would doubtless be desirable for drying out a new lining, S.

Returning now to Mr. Campbell's objections, it would seem that all of them have been met more or less effectively except *d*, the question of loss. In the experiments at the works of Bolckow, Vaughan & Co., under favorable conditions, the loss from the molten pig iron to the ingot was about 9 per cent.; while, on the other hand, Mr. Talbot claims for his process a gain of 6 per cent. It becomes therefore a question of the economy of reducing ore in an open hearth furnace at the expense of the output.

Which is cheapest? (*a*.) To use ten 40-ton furnaces to produce 6500 tons of ingots per week from pig and scrap by the usual methods and with the usual losses, or (*b*) to use twelve 75-ton tilting furnaces to produce 6500 tons of ingots per week from molten pig iron with 6 per cent. gain by Mr. Talbot's process, or (*c*) to use ten 40-ton furnaces to produce 6500 tons of ingots per week from molten pig iron with 2 per cent. gain by Mr. Monell's process, or (*d*) to use four 40-ton furnaces and one reducer, such as described, to produce 6500 tons of ingots per week from molten pig iron with 9 per cent. loss?

It is an admitted fact that the economy of the Bessemer process lies in its large output. It is also admitted that the principal cause of the decreasing cost of steel manufacture is the increasing tonnage of the plants. What is more reasonable than to say it would be economical to multiply the open hearth output by three, even at the expense of not reducing some ore which could be much cheaper reduced in the blast furnace?

In addition, the limited yard space occupied per ton of product would be no small item in many of the older plants.

A Century of Engineering.*

BY W. A. BOLE.

The present time seems to be a peculiarly fitting one to indulge in a few reflections upon what has happened during the century just completed, and particularly so on account of the very large, the predominating part, which was displayed by the mechanic and the engineer, the artisan and the scholar, in that development, whose like was never seen in equal time since "The evening and the morning were the first day."

Other centuries produced the warrior and the conqueror, whose glory was achieved at the expense of the blood of thousands. The genius of the present day, and of the cycle just completed, is a peaceful genius. He is the mechanic, with his twin brother, the engineer, the brawn and the brain, the way and the will.

The Steam Engine.

There is perhaps no one way in which the wonderful advance of the mechanical arts can be so clearly and distinctly presented to you as by calling your attention to the fact that 100 years ago the steam engine had barely been invented and applied as a means of furnishing motive power for manufacturing purposes. It is a matter of history that James Watt obtained certain patents for improvements in steam engines as early as 1781, or 19 years before the nineteenth century begun, but for a long time he seems to have been practically the only engine builder doing business, and his patents probably prevented others from entering largely into this field, until about the beginning of our nineteenth century. Contrast such state of affairs with the present times. The steam engine of to-day is the controlling feature of our industrial civilization. It furnishes the motive power by which all our manufactures are impelled, and without its use scarcely one of the articles which we use in our everyday life could be produced in sufficient quantity to satisfy the needs of mankind. It is as unnecessary as it is impossible to indicate just how deeply and to what extent this most useful machine is concerned in our comforts and business interests. Looking back to the beginning of the nineteenth century, it was at that time a "coming event," no doubt of wonderful interest to the people of that generation; but it had been seen by few and employed by still fewer of the people of that day. Their motive power was confined almost wholly to the use of water wheels, and this, of course, was a matter of geography and topography, consequently only a few favored localities were available for manufacturing purposes. Now we can locate a manufactory at almost any place we please, and other considerations than those of a century ago determine the choice of location. The steam pressure of those days was very low. Watt employed steam pressures of about 7 or 8 pounds above atmosphere. The large portion of his effective pressure, as shown by indicator diagram, was below the atmosphere line, as his engines all ran condensing. There has been during the century a gradual improvement in the art of construction, and the development of the steam engine since the days of Watt and during the century just passed has been chiefly along the line of improved details. The mechanics of that day did not have such facilities with which to construct them as we have now. The boiler pressures in current use have steadily risen during the past century as better materials and better workmanship made higher pressures safe and advisable. To-day 125 pounds per square inch is a very common pressure for ordinary stationary engines; 150 to 175 pounds pressure is frequently met with in power plants of the better sort, and in some cases 200 pounds pressure per square inch is employed, with the suggestion that even more may shortly be called for. This, of course, enables the steam engine to yield a much larger output of power per ton of total weight, and as it has been possible to increase boiler pressures so also the working parts and the structure of steam engines have been improved and strengthened, until now the weight of engine per horse-power of capacity and the cost of plant is vastly less than in Watt's time. It is interesting to conjecture how these early engines must have been built. The machine tools of to-day, such as the engine lathe, the planer, the milling machine, the radial drill, and others, did not exist then, and much of the work must have been done by hand. It is difficult to locate precisely just when the advent of machine tools in their present form took place, but it is reasonably certain that the slide rest, by which the lathe of to-day supports its tool and does its cutting, although invented by Maudsley in 1794, was not generally employed before the past century was well advanced, and the iron planing machine was not employed until about 1830. At the beginning of the nineteenth century all turning in lathes was done by the use of hand tools, much as wood turning is still done in our pattern shops or cabinet departments.

The art of molding and the making of iron castings, while far inferior to these branches as conducted to-day, were nevertheless more nearly adequate, I imagine, than the machine shop facilities of that period. Watt's early cylinders were not more than ⅜ inch out of round in 18 inches. All this within a period of 100 years. There are few of us, I dare say, whose lives have not overlapped that of some ancestor who witnessed the advent of the nineteenth century, and such reflections may assist us in getting a clearer grasp of the extraordinary strides which have been made in the development of matters mechanical in that time. In that time the world has made more material progress, certainly more mechanical progress, than in all the preceding centuries of history.

Railroads.

The improvements in means of transportation of persons and materials during the past century mark a wonderful degree of progress, and again, in this respect, the advances of 100 years, when recalled, seem marvelous. The locomotive, by which we are drawn in ease and comfort from one extremity of a continent to another, did not exist at the opening of the nineteenth century. The first successful attempt on this line seems to have been made by Trevethick in 1804, he being the first person to successfully employ a machine which depended upon friction between its own wheels and iron rails to afford traction. The progress in railroading since that time seems like a fairy tale. The means by which our forefathers got about from place to place, previous to the beginning of the nineteenth century, was confined to animal means or to the slow and tedious canal boat, or sailing vessel, and the time employed in making trips of any length must have been very great. Stephenson brought out his famous locomotive, the "Rocket," in 1829, at a time when the century was nearly one-third passed by. Since that time there has been a great procession of mechanics, vigorously and continuously employed in improving the details, increasing the size and capacity and bettering the efficiency of the iron horse, until now we are able to make the trip from New York to San Francisco in 100 hours. When our ancestors came across the Allegheny Mountains from the eastern shores of this country some of them came by canal boat, some of them rode in stage coaches or on horseback, and it is possible that not a few of them walked. How long it took them to come it is now rather difficult to tell, but some comparison may aid us in taking in at a sweep what has transpired in this direction within a century. The introduction of the telegraph in 1843 by Morse had doubtless a great deal to do with the development of railroading, as it made communication between distant points, and the control of trains when out on the line, possible and reasonably sure.

The introduction of the air brake as an important feature in railroading took place in 1869, and this improvement made it possible to run trains at a higher speed and yet with greater degree of safety than had hitherto been known. Marking the advance of railroading during the century, mention should be made of the introduction of sleeping cars by Pullman about 1859, which has had a great deal to do with our comfort and welfare while "on the road." The progress of railroading has been marked by great and radical improvements

*Address, as retiring president, before the Engineers' Society of Western Pennsylvania.

in road bed construction, in the building of bridges and viaducts, in the employment of means for signalling, for operating switches, and in every other direction. The railroad bridge, such as we now look upon as a matter of course, was in that early age, 100 years ago, unknown. The truss bridge did not make its appearance until after the last century had gotten well on toward the half-way point. The use of the arch and of the suspension bridge in a mild way dates back a long distance, but the use of the truss, in which no stresses except vertical ones are transmitted to piers or supports, was not known.

Navigation.

We do not do all of our traveling, however, on wheels, and when we consider means of navigation we learn by the records that the first successful attempt to propel a boat of any kind by machinery was made on the Clyde in 1802. Fulton, who is generally regarded as the father of the steamboat, built his first successful boat in 1807. Her length was 130 feet, her draft 4 feet, her capacity 160 tons, her steam cylinder 24 inches in diamater, 4 feet stroke, her speed 5 miles an hour. It is a far cry from this creation of Fulton's to such a floating hotel as the "Deutschland" of to-day, whose length is 684 feet, whose depth is 44 feet, whose engine power is 35,000 horse-power, and whose speed when ploughing the ocean reaches almost 25 miles per hour. The intervening years have been filled in this field of labor, as in others, by persistent, intelligent and indefatigable workers, each contributing something to the sum total of good, and we who live to-day profit by their labors and honor them for their achievements.

Metallurgy.

Turning from this subject to another of equal interest to us who are here present, the metallurgical advances of the past century are fully as stupendous as those already cited. It needs little beyond the suggestion of the steam engine's status at the beginning of the nineteenth century to prove that the art of manufacturing and using the more ordinary metals, and in particular iron, was then very insignificant. Without the steam engine the blast furnace, the forge, the rolling mill, the foundry, were impossible. The manufacture of iron in those days was necessarily very limited, although they did succeed in making a little of a good many things which we still use. The manufacture of iron in our own country must have been limited largely to the bloomery or the Catalan forge, in which a wrought iron rather than a cast iron was produced. These furnaces or forges, which seem to have been a sort of compromise between a blast furnace and a puddling furnace, supplied by a blast of air obtained by various means, all which are now obsolete. Skins of animals probably enabled the old fashioned bellows to be constructed. In some favored localities the curious effect of compressing air by a falling stream of water was employed, and it is probable that in some cases piston compressors were employed, these latter impelled by water wheels. When the steam engine became available for this sort of service, it naturally gave a wonderful impetus to the manufacture of iron, since it enabled blast pressures to be increased and furnished power by which to hoist the stock, to convey away the product, and to supersede manual labor in almost every direction. It would be impossible to trace the progress of this wonderful art within the limits of the time here allowable, but a few of the important events may be cited to indicate how matters progressed from year to year. The waste gases from the tops of furnace stacks were first utilized in 1811, probably to burn in the boiler furnaces, to generate steam for the blowing engines. The use of hot blast was introduced in 1828. The steam hammer was invented by Naysmith in 1842. Previous to that time all forging had been done by hand, or by the now antiquated helve hammer, deriving its motive power from either the steam engine or the water wheel.

This is pre-eminently an age of steel, and yet Sir Henry Bessemer introduced the first practicable method of converting iron into steel, at least for structurel purposes, when he brought to light his pneumatic process of conversion in 1856. That other and rivaling method of converting iron into steel—namely, Siemens-Martin regenerative open hearth process—was successfully introduced about 1868. Since that time the progress in iron making and in steel making has been in the line of improvements in detail, the introduction of machinery of the most modern and substantial sort for almost every operation connected with the manufacture of iron and steel, until to-day, as antithesis to the Catalan forge of 100 years ago, we have such gigantic blast furnaces as those found at Duquesne, Youngstown, Bessemer and other places too numerous to mention, whose average daily capacity reaches the enormous figure of 600 tons for a single stack. These monstrous furnaces are some 23 feet in diameter at the largest part, over 100 feet in hight, and call for 45,00 to 50,000 cubic feet of free air per minute. Such a furnace under the most favorable conditions will produce a ton of iron with a consumption of 1700 pounds of coke, under average conditions will produce a gross ton of pig iron for something better than a net ton of coke.

From the helve hammer of 100 years ago, or the first steam hammer of 58 years ago, is a long stride to the latest and most modern machinery for forging iron and steel, the best illustration of which is found in the monstrous hydraulic forging press operated by the Bethlehem Steel Company in the eastern part of our own State. This immense machine is capable of exerting a pressure of 14,000 tons upon the material placed between its dies. It is capable of receiving and successfully reducing to suitable section an ingot of steel whose cross section is upward of 6 feet in diameter and whose total weight is 275,000 pounds. Tributary to this machine is the modern method of hollow forging, by which such articles as shafts, gun hoops, gun tubes and various other shapes are produced by being forged upon a mandrel, thus increasing the compressive power, and more thoroughly working every portion of the material contained in a large shaft or similar shape. Such other accessories as mark the advances in art of iron and steel manufacture are so numerous as to defy description. Such features as hydraulic cranes, continuous rolling mills for automatic production of bars and the like, heating furnaces and improvements therein, metal mixers or reservoirs for molten iron on its way from the blast furnace to the steel plant, can only be mentioned, but not described.

Electricity.

During the past century the art of making ice by artificial means was introduced, and the first successful machine for this purpose is reported to have been introduced in 1855. The telephone, the telegraph, the submarine cable, the phonograph, the biograph, and all the kindred and marvelous inventions related thereto have been brought to light during the century which has just passed into history. The cylindrical printing press, the linotype, and a great many of the important features of the art preservative were brought to light since 1801, starting a new cycle of years on its way. Photography, although scarcely a matter of mechanics, nevertheless of wonderful interest and service to us now, was born during the period under discussion.

The past century produced the gas engine, that lusty young rival of the steam engine, which is now threatening to supersede the latter for many purposes and offers much promise of future development.

Electricity 100 years ago was little more than a speculation of the philosophers, and as far as being a factor in the activities of that day, it might compare with the present status of hypnotism.

To be sure Franklin had flown his kite, Galvani had observed the muscular contraction of the frog in certain connection, and frictional apparatus had enabled the savants of that day to produce sparks and other interesting effects of no present utility.

It was not until the present century had almost spent itself that electricity gained a place in engineering, but its present foothold seems to be too evident to be doubted. During the past century currents of electricity have been obtained in two ways, both unknown hitherto. The oldest of these was by chemical means, from voltaic cells or batteries, and the means is still employed by many

of the lighter kinds of service, and to-day it rings our door bells and summons us to our meals. The other means of producing currents, and the one by which such wonderful impetus has been given to this particular science, was the mechanical, or the dynamo-electric. In 1820 Professor Oersted of Copenhagen discovered that an electric current from a battery, passing through a wire, acted on a compass needle placed near the wire and tended to turn the needle. And in the same year it was discovered that electric currents could produce magnetism in iron and steel, and the electric magnet was born. In 1831 Faraday began the series of discoveries which form the basis of modern electric practice. He showed that a magnet could produce electric currents, and thus made possible the construction of the modern dynamo or electric generator. It was not until the latter half of the last century, however, that these principles took form in practical machines, as distinguished from laboratory apparatus, and three-quarters of the century was gone before we saw the streets and buildings of our Smoky City illuminated by the arc and incandescent lamp, and only 15 years ago did the patient car horse doff his harness and acknowledge his inferiority to the now ubiquitous trolley car.

Truly so lightninglike has been the progress of this wonderful science that we are reminded of the mythologic story of the Goddess Minerva, who sprang "full armed from the brain of Jupiter." To-day electric generators are busily revolving in every land under the sun, and the size and capacity of some of them stagger the understanding. In New York City are single generators producing as much as 3500 kw. of electric energy and requiring monster engines developing as high as 6000 indicated horse-power to impel them. Even larger units are now under construction, and generators of 5000 kw. are building to-day.

Niagara is harnessed by this subtle, elusive, but persuasive fluid, and Horse Shoe Falls has superseded the mule for urban transportation, in that vicinity, has even usurped his very name, and electric current is sold in the open market as "horse-power."

The battery generated current made possible the telegraph, which became a tremendous agent in the world's development, at its advent in 1843-44.

The sub-marine cable connecting Europe with America was laid in 1859, and I am sure some of you older members of our society can remember the time when this now common means of communication seemed like a miracle of invention. Events of this class "have trod on each others' heels, so fast they followed." The telephone and the phonograph have come within the recollection of even the youngest member here present. Electric chemistry, electric metallurgy, electro-therapeutics, are they not all of that wonderful epoch whose close we have just witnessed? The first message ever flashed across the Atlantic cable was from the good Queen Victoria to our President Buchanan, and the words were these: "What hath God wrought?" In summing up the results of a century's progress in electrical matters, what more fitting words can be employed than these of the gentle sovereign of our mother country.

In the mechanical progress of the past century, it is fair to say that our country has contributed a very fair share and done its full quota in the matter of development. It is of course true that the mother country has been the birthplace of many of the notable events in that industrial progress, especially during the early half of the century just passed. It is but natural that American progress in these arts during the early half of the century should be relatively small as compared with the mother country. Our predecessors of the early portion of the century were engaged in fighting Indians, cutting down forests, in making highways, in tilling the soil, and in doing that amount of pioneer work which has made it possible for us, their successors, to turn our attention to the inventive arts and to rival the mother country and her European competitors. To-day American supremacy in many lines of manufacture is a recognized fact, and the nations of Europe are becoming greatly alarmed at the danger which seems to impend to their interests from the active Yankee. Our superiority, if it indeed exists, should not be accepted too complacently by ourselves, nor should we flatter ourselves that we possess a capacity and an intelligence beyond that of our European competitor. Much of our progress is a matter of fortunate circumstances. We owe as much to the bountiful supply of mineral advantages which nature has prepared for us as to any personal merit of our own, and American superiority of to-day in a manufacturing sense is largely attributable to these matters of good fortune which are ours. Our American export trade has increased to a tremendous amount, and it is estimated that during the last year, 1900, something over $200,000,000 worth of American products were carried across the ocean to foreign lands. This is in marked contrast to the state of affairs existing at the opening of the nineteenth century, when few manufactured articles were made in our own country, and when the imports vastly exceeded the exports.

It may be serviceable now to mention some of those matters in which the past century has not been so productive of progress. Architecture, as an instance, seems to me to be in marked contradistinction to matters metallurgical. There are structures of great grandeur and sublimity found throughout the older countries of the civilized world which seem to defy competition. Ecclesiastical architecture in particular seems to fill this description. The ancient cathedrals of Europe, as, for instance, St. Peter's of Rome, St. Mark's of Venice, the cathedrals at Milan, Cologne and Paris, have not been equaled by any edifice, to my knowledge, during the century just passed, and it is a matter of great wonderment how, in the early ages (now centuries gone), it was possible for men to construct some of these monuments of human skill. In other of the finer arts, as painting and sculpture, the past century has not shown any improvement upon, if, indeed, an equality with previous centuries. It may be said in justice that the latter age and the century just passed is pre-eminently an age of utility, and it is no longer considered to be as good form to spend time and effort to emulate the works of Michael Angelo as in designing and building railroad depots, apartment houses and hotels, and comfortable dwelling houses. The tendency of this change of intent has been for the good of the masses of people, for the emancipation of the lowly, and for the more complete recognition and realization of that brotherhood of mankind which is more generally recognized now than it was in the days "when knighthood was in flower."

The introduction of the art of printing was made long before the advent of the nineteenth century, but certainly during this century the improvements in this art, as well as the facilities for distributing the products of that art, have had a wonderful lot to do with the material advances which have taken place during this epoch. Books are now, by modern methods of printing, so cheap and so available to every one who will read that they bring to every man for his individual improvement and assistance the records of the past achievements, and thus enable him to take advantage of all that his predecessors have done and have discovered. In a social sense the introduction of machinery during the past century has shortened up the hours of labor for the toiler, has made his work less arduous and exhausting, has cheapened almost every article which he consumes, and has made of the serf and the plebeian of a few generations ago the citizen and the individual sovereign of to-day.

In thus attempting to review the advances made within the space of 100 years, comparing such advances with what had transpired in previous ages, one is forced to the conclusion that in matters of pure intellect the representative man of to-day is not very much, if at all, superior to his compatriot of 20 centuries back. The architecture, the sculpture, the oratory, the logic of the Greek, is not surpassed by any living master of the present moment, but, as it seems to me, this intellectual capability is directed nowadays in channels very much more useful than ever before. The efforts of the man of to-day are directed constantly, no matter in what line of occupation, to increase of capacity, betterment of efficiency, and to the saving of time. As a result we live, in a sense, very much longer than our ancestors, and our

individual experiences are perhaps as varied and as extensive as though we had lived two or three centuries instead of the allotted three score and ten years. It is a fact, however, that longevity has been increased during the past century, doubtless due to improvements in all branches of sanitary engineering, and to strides in the arts of surgery and medicine, until we are now able to "stand" off the grim reaper for a longer time than were our forefathers.

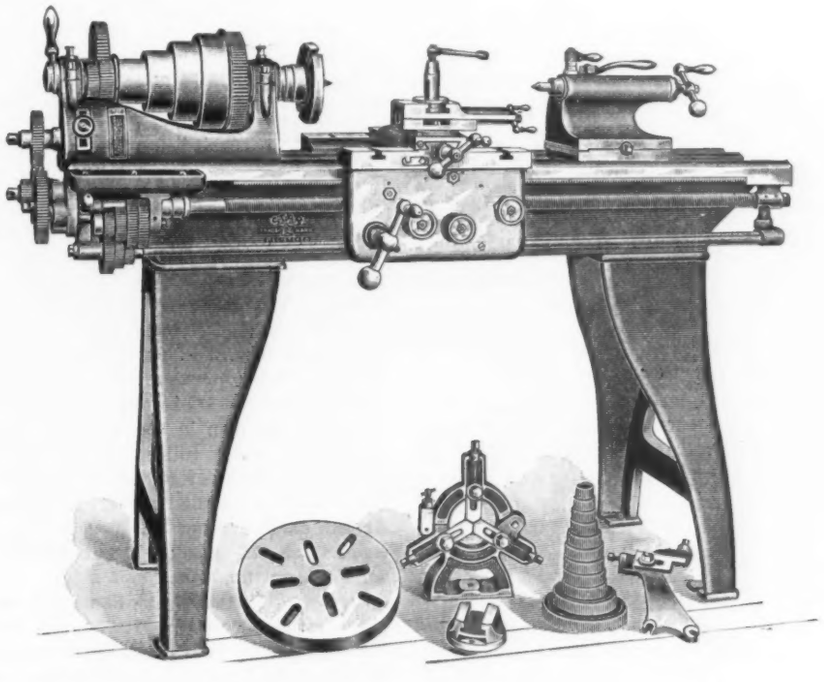
Future.

If one were to ask what is to be expected in the way of industrial progression during the century which we have now entered upon, the answer is beyond the writer's capacity to even guess. Doubtless the people of 1801 thought they were pretty well on in the arts and sciences, and it is not unlikely that any prophet of that distant year would have made a successful stagger at predicting our present status. It would seem to be equally unwise at the present time to venture upon any prediction as to what may happen between now and the year 2001. It may be said, however, that the high pressure life of to-day makes incumbent upon the man of to-day a grade of application, of study and of personal mental improvement which will be emphasized and accentuated during the coming years. Improvements in mechanism necessitate improvements in mechanics as well, and the mechanics and the engineers of a century hence will have to be men capable of living up to the lights of that advanced epoch, just as the most successful men of to-day are necessarily studious, vigorous and indefatigable in their labors. It may easily become the task of the retiring president of the Engineers' Society of Western Pennsylvania, in making his annual address in 2001, to refer back to the blast furnace which I have just mentioned as a mechanical marvel, and to the hydraulic forging press, which I have referred to, and he may consider these as evidences of man's puny attempts at dealing with materials when the subject now under discussion shall be 100 years older. Let us indulge the hope that the grandsons and the greatgrandsons of the engineers of 1901 may be worthy of the age and the opportunities in which they shall operate.

The builders' trial of the new battle ship "Illinois" will take place on February 15, off Cape Henry. The "Illinois" is being built at the Cramp yards in Philadelphia. All the armor plate, except that for the turrets, is on the ship.

The Star Tool Room Lathe.

The Star tool room lathe, built by the Seneca Falls Mfg. Company of Seneca Falls, N. Y., is provided with either plain, compound, or rise and fall rest, U. S. standard, Whitworth, or metric lead screw, and also with drawing in chuck and taper attachments. The head stock is of the web pattern. The hollow spindle is made from a crucible steel forging and runs in phosphor bronze bearings. The cone pulley has four steps and with the back gears gives eight changes of speed. The body of the tail stock is curved so as to allow the compound rest to swing around parallel with the ways and over the base of the tail stock, with room to operate the feed screw handle. The tail stock spindle is arranged with self discharging center, and has a spindle locking device which insures perfect alignment. The tail stock is further provided with an adjustable side movement for turning tapers. The carriage is formed with T slots for bolting on angle plates, &c., is gibbed to the bed and has a cam locking device for securing it to the bed when the cross feed is in use. The tool post has a collar and shoe which excludes all dirt and chips. The power is transmitted from the spindle to the feed rod entirely by gears and is arranged with three different changes of speed. Changes can be made without stopping the machine, and both cross and longitudinal feeds can be operated independently or in combination, as desired. The feeds are actuated by two phosphor bronze worms on the feed rod, thereby securing the proper graduations of speed of the two feeds. The lathe will cut all standard threads from 3 to 64 inclusive, without compounding the gears, and nearly all threads by compounding them. The taper attachment is fastened to the back of the carriage and is always in position ready for use. The lathe swings 13 inches over the bed and is made with beds of 5, 6 and 8 feet in length.



THE STAR TOOL ROOM LATHE.

The negotiations for the formation of a combination of the Tin Can manufacturing plants of the United States are said to be progressing favorably. According to recent reports, the promoters of the scheme are contemplating absorbing in the combine all companies which produce Can Making Machinery. The number of these concerns is limited, and as they hold certain patents on Can Making Machinery, the desirability of including them in the proposed consolidation is obvious.

Our Pig Iron Production in 1900.

The American Iron and Steel Association has issued the statistics of the production of pig iron for the year 1900, which show that the total output of the year was 13,789,242 gross tons, as compared with 13,620,703 tons in 1899. The product of the first six months of 1900 was 7,642,569 tons, while that of the second half declined to 6,146,673 tons, a drop of very close to 1,500,000 tons in six months, or at the rate of 3,000,000 tons per year. The following table gives the half yearly production of pig iron in the last four years:

Periods.	1897.	1898.	1899.	1900.
First half.....	4,403,476	5,869,703	6,289,167	7,642,569
Second half.....	5,249,204	5,904,231	7,331,536	6,146,673
Totals.....	9,652,680	11,773,934	13,620,703	13,789,242

The production of pig iron in the second half of 1899 and the first half of 1900 aggregated 14,974,105 tons, or almost 15,000,000 tons.

By States the production for 1900 was as follows:

Total Production of Pig Iron.

States.	Production.—Gross ton of 2,240 pounds. (Includes spiegeleisen.) First half of 1900.	Second half of 1900.	Total for 1900.
Massachusetts	1,554	1,756	3,310
Connecticut	5,179	5,054	10,233
New York.....	193,460	99,367	292,827
New Jersey.....	101,074	69,188	170,262
Pennsylvania	3,493,842	2,872,093	6,365,935
Maryland	153,667	136,406	290,073
Virginia	272,749	217,868	490,617
North Carolina..... } Georgia ..... }	14,171	14,813	28,984
Alabama	605,977	578,360	1,184,337
Texas	7,662	2,488	10,150
West Virginia.....	90,358	76,400	166,758
Kentucky	45,757	25,805	71,562
Tennessee	187,694	174,496	362,190
Ohio	1,464,208	1,006,703	2,470,911
Illinois	712,473	650,910	1,363,383
Michigan	79,262	84,450	163,712
Wisconsin ..... } Minnesota ..... } Missouri ..... } Colorado ..... }	128,547	56,247	184,794
	84,935	74,269	159,204
Totals, 1900.....	7,642,569	6,146,673	13,789,242

According to fuel used the production was:

Total Production According to Fuel Used.

	First half of 1900.	Second half of 1900.	Total for 1900.
Anthracite	990,667	686,381	1,677,048
Charcoal	167,146	172,728	339,874
Bituminous	6,459,714	5,267,998	11,727,712
Charcoal and coke.....	25,042	19,566	44,608
Totals, 1900.....	7,642,569	6,146,673	13,789,242

The production of charcoal iron was as follows:

Production of Charcoal Pig Iron.

	First half of 1900.	Second half of 1900.	Total for 1900.
Massachusetts	1,554	1,756	3,310
Connecticut	5,179	5,054	10,233
New York.....	3,090	4,830	7,920
Pennsylvania	1,621	1,801	3,422
Maryland ..... } Virginia ..... }	2,794	3,181	5,975
Georgia	9,903	12,976	22,879
Alabama	30,030	27,602	57,632
Texas	7,662	2,488	10,150
Kentucky ..... } Tennessee ..... }	1,332	1,787	3,119
Ohio	2,342	5,395	7,737
Michigan ..... } Wisconsin ..... } Missouri ..... }	101,639	105,858	207,497
Totals, 1900.....	167,146	172,728	339,874

In 1899 the production of charcoal iron was 284,766 tons.

The production of pig iron in the Pennsylvania and Ohio districts was:

Production of All Kinds of Pig Iron in Pennsylvania and Ohio by Districts.

Districts.	Production.—Gross tons of 2,240 pounds. (Including spiegeleisen.) First half of 1900.	Second half of 1900.	Total for 1900.
Pennsylvania:			
Lehigh Valley.....	307,631	237,567	545,198
Schuylkill Valley.....	232,834	208,284	441,118
Up. Susquehanna Valley	81,617	59,506	141,123
L. Susquehanna Valley.	332,712	205,497	538,209
Juniata Valley.....	75,203	51,221	126,424
Allegheny County.....	1,627,093	1,491,668	3,118,761
Shenandoah Valley....	485,999	314,215	800,214
Miscel. bituminous.....	349,132	302,334	651,466
Charcoal	1,621	1,801	3,422
Ohio:			
Mahoning Valley.....	541,369	460,993	1,002,362
Hocking Valley.....	24,888	25,613	50,501
Lake counties.....	350,793	146,791	497,584
Miscel. bituminous....	390,628	277,183	667,811
Hanging Rock bitum...	154,188	90,728	244,916
Hanging Rock charcoal	2,342	5,395	7,737

The production of Bessemer pig was as follows:

Production of Bessemer Pig Iron.

	First half of 1900.	Second half of 1900.	Total for 1900.
New York and New Jersey	27,160	13,140	40,300
Pennsylvania:			
Lehigh Valley.....	54,833	45,944	100,777
Schuylkill Valley.....	41,039	42,165	83,204
Up. Susquehanna Valley	78,929	58,836	137,765
L. Susquehanna Valley } Juniata Valley..... }	266,327	146,119	412,446
Allegheny County.....	1,305,801	1,166,872	2,472,673
Shenango Valley.....	377,141	255,873	633,014
Miscel. bituminous.....	215,243	187,275	402,518
Maryland	134,632	126,056	260,688
West Virginia and North Carolina	92,204	77,598	169,802
Kentucky and Tennessee.	13,430	.....	13,430
Ohio:			
Mahoning Valley.....	391,090	326,153	717,243
Lake counties.....	333,977	119,347	453,324
Hanging Rock bitum..	55,601	15,184	70,785
Miscel. bituminous.....	390,628	266,683	657,311
Illinois	600,999	577,242	1,178,241
Michigan, Wisconsin and Minnesota	21,429	356	21,785
Missouri and Colorado...	60,928	57,218	118,146
Totals.....	4,461,391	3,482,061	7,943,452

The production of Bessemer pig in 1899 was 8,202,778 tons.

The output of basic pig was as follows:

Production of Basic Pig Iron.

	First half of 1900.	Second half of 1900.	Total for 1900.
New York and New Jersey	2,375	2,554	4,929
Pennsylvania:			
Allegheny County.....	211,508	235,035	446,543
Other counties.....	189,992	154,073	344,065
Maryland, Virginia, Tennessee and Alabama...	105,211	74,506	179,717
Ohio, Missouri and Wisconsin	72,782	24,340	97,122
Totals.....	581,868	490,508	1,072,376

Since the production of basic pig in 1899 was 985,033 tons, the increase has not been as large as might be expected from the rapid development of the basic open hearth process.

The production of spiegeleisen and ferromanganese in 1900 was 255,977 tons, against 219,768 tons in 1899.

Unsold Stocks.—The statistics of unsold stocks collected by the American Iron and Steel Association do not include pig iron sold and not removed from the furnace bank, or pig iron in the hands of creditors, or pig iron manufactured by rolling mill owners for their own use, or pig iron in the hands of consumers. The stocks which were unsold in the hands of manufacturers or their agents on December 31, 1900, amounted to 442,370 tons, against 63,429 tons on December 31, 1899, and 338,053 tons on June 30, 1900.

Included in the stocks of unsold pig iron on hand December 31, 1900, were 12,750 tons in the yards of the American Pig Iron Storage Warrant Company which were yet under the control of the makers, the part in these yards not under their control amounting to 3650 tons, which quantity, added to the 442,370 tons above mentioned, makes a total of 446,020 tons which were on the market at that date, against a similar total of 68,309 tons on December 31, 1899, and 342,907 tons on June 30, 1900. The total stocks in the above named warrant yards on December 31, 1900, amounted to 16,400 tons, against 4900 tons on December 31, 1899, and 5800 tons on June 30, 1900.

The convention of the United Mine Workers of America, in Indianapolis, Ind., on Monday completed its work on the scale for the year. The report of the committee demands that the run of mine system be contended for in the entire competitive district, which comprises Indiana, Ohio, Illinois and Pennsylvania, and that the differential of 7 cents between pick and machine mining be insisted upon. An advance of 15 per cent. on mining block coal was recommended and adopted, and of 20 per cent. in the wages of inside laborers. The question of the wages of outside laborers was left to be settled by the joint conference, which meets at Columbus, Ohio. The demand for day laborers is equivalent to an approximate increase of 15 per cent.

A committee of the Commercial Exchange of Des Moines, Iowa, is working on a proposition from Pennsylvania parties to establish a rolling mill at that point to work up local scrap iron.

The Ship Subsidy Bill.

WASHINGTON, D. C., January 29, 1901.—The action foreshadowed in these columns last week, by which the ship subsidy bill would be restored to the advantageous position of "unfinished business" in the Senate, was taken during the past week, and the measure is now the regular order, subject to be laid aside only for the consideration of the regular appropriation bills, the war revenue reduction bill and, upon a majority vote, other pressing measures of the highest importance. The success of the managers of the shipping bill in thus recovering a portion, at least, of the ground lost since the beginning of the session has greatly encouraged them, and, while they do not underestimate the difficulties to be overcome, they do not hesitate to declare that the bill will be passed before March 4. The opponents of the measure are also emphatic in predicting its defeat, but it is generally conceded that the bill has now the solid support of the Republicans and occupies a far better position than a fortnight ago.

An Extra Session.

Perhaps the most important development of the week has been a series of conferences between Republican leaders in the Senate, at least one of which has taken place in the White House, concerning the possibility of an extra session. No measure now before Congress will be so favorably affected by the calling of an extraordinary session as the subsidy bill, and final decision as to whether Congress shall be called back in March or April is awaited with the liveliest interest by the advocates of the pending bill in and out of Congress. As an independent proposition the Administration is strongly disposed to discourage the idea of an extra session. There being no constitutional limit on the length of such a session, it might be prolonged indefinitely and made to supply the opportunity for the enactment of any legislation the majority might favor. For this and other reasons the Administration would hesitate to call Congress back, and probably would not do so simply to secure the passage of the subsidy bill, should that measure fail to pass during the present session. The President is very anxious, however, that Congress shall speedily ratify the Cuban constitution, which is now under discussion in Havana, and shall provide the Philippines with a civil government along the lines laid down by the Taft Commission in the report which has been communicated to Congress during the past week. It is the general opinion that it would be extremely unwise to postpone action on these two important measures until next December, and so far as the Philippines are concerned, both the Taft Commission and the officials of the Administration are confident that the early passage of a bill providing a civil government would do much to bring about a cessation of hostilities. To undertake to act on either of these propositions at the present session, however, is regarded as utterly hopeless, even if the entire time of the Senate were not already mortgaged for the consideration of important routine legislation. It therefore seems clear that if either of these questions is to be acted upon the President will be forced to call an extra session, and it is assumed that he will do so, if at all, shortly after the adjournment.

There are several reasons why, if an extra session should be summoned, it would probably prove a very short one. In the first place, several of the most active opponents of the shipping bill, as well as of the policy of the Administration with regard to Cuba and the Philippines, will retire from Congress on March 4, and would not participate in an extra session. In the second place, the fact that there would be no limit upon the length of the session would probably operate to prevent an organized filibuster, which would hardly be undertaken with a view to forestalling action until next December. There is an important contingent among the minority in the Senate at the present time engaged in opposing the subsidy bill in good faith who do not hesitate to state that their constituents will hold them responsible for the passage of the bill should it get through at a time when it is conceded that half a dozen Senators devoting their best energies to the object can prevent its passage. In an extra session, however, no such incentive would exist, as a nine months' filibuster would be unprecedented and concededly unjustifiable. Generally speaking, the managers of the subsidy bill are opposed to an extra session, but if the bill fails at the present session they will be gratified if the President sees fit to call Congress back, though, as above stated, it is not thought he will do so merely to consider the shipping bill.

Senator Vest's Speech.

The lines of the debate in the Senate on the subsidy bill have been laid down during the past week in two notable speeches, one against the bill by Senator Vest of Missouri, author of the free ship substitute, and the other by Senator Depew in strong advocacy of the measure. Senator Vest assailed the committee which formulated the bill, attacked the International Navigation Company as the chief beneficiary under the measure, and charged the Commissioner of Navigation with having abandoned his original position in favor of free ships in order to avoid antagonizing the Administration.

"The pending bill," says Senator Vest, "comes before us ostensibly from the Committee on Commerce. It really comes from a committee of promotion, composed of 25 very respectable and even eminent gentlemen, four of whom are members of the Senate and one a member of the co-ordinate branch of the legislative department, selected by the junior Senator from Maine (Mr. Frye).

"The chairman of this committee of promotion is Clement A. Griscom of Philadelphia, president of the International Navigation Company, a gentleman of high character, great intelligence and wonderful energy. The company he represents is the largest beneficiary by far under the provisions of this proposed legislation. No just and fair minded man can blame Mr. Griscom for endeavoring to do the best he can for his corporation and its stockholders.

"I have no criticism to make of the *personnel* or motives of this committee of 25, but I must be permitted to express my surprise and regret that, as formed by the junior Senator from Maine, there was not upon this committee one member who was willing that a citizen of the United States should be permitted to buy his ship where he could buy it cheapest and sail it under the flag of his country. In other words, to use the language of the Senator from Maine, this committee of 25 is unanimous in favor of the obsolete and outrageous navigation laws which are a stain upon the statutes of the United States, and which for 50 years have been riding our merchant marine to death, as the Old Man of the Sea rode to exhaustion Sinbad the sailor.

"The Commissioner of Navigation, Eugene Chamberlain of New York, is now one of the most active and enthusiastic advocates of subsidies and of the exclusive features of the navigation laws. Mr. Chamberlain was appointed as a Democrat in 1893 by President Cleveland, and he signalized his advent to office by a violent attack upon the navigation laws and an earnest advocacy of free ships. In 1895 the Commissioner of Navigation repeated and emphasized with all the power of rhetoric his adherence to free ships and his undying opposition to the navigation laws. In October, 1896, the Commissioner of Navigation, metaphorically speaking, stepped out on the back porch one sunny morning, and looking up at the kitchen chimney saw that the smoke was drifting toward the Republican camp, and the commissioner drifted with the smoke. In his report for 1895 he denounced subsidies, and specifically stated that France had given $19,000,000 for subsidies and Italy had given $13,000,000, and these expenditures had amounted to nothing; that but for the fact that the people of those countries were permitted to buy their ships where they could buy them cheapest their merchant marine would have disappeared from the ocean. He said in that report that every civilized country, and even China, had abolished these navigation laws, and it remained for the people of the United States alone to be subjected to their outrageous obligations.

"In 1898 the Commissioner of Navigation, having gone over absolutely to the subsidy camp and contra-

dicted every assertion and every argument that he had made previous to that time, declared that for $4,000,000 a year in subsidies the merchant marine of the United States could be restored, and that for $5,000,000 or $6,000,000, scientifically administered, as he expressed it, the merchant marine of this country could be made second alone to that of Great Britain."

Mr. Vest further charged that the entire subsidy bill was a high protection measure, which "breathed the essence of exclusion," the principle upon which it was based being so "obnoxious to the civilization of the world that even China had abandoned it." He added that New England and the Atlantic Coast would monopolize all the benefits from the bill, which was distinctly a New England measure both in conception and formulation.

Senator Depew on the Bill.

Senator Depew defended the bill in an elaborate argument, in which he took up in order the criticisms of the measure made by its opponents and replied to them *seriatim*. He said in part:

"Of the three principal objections raised against the bill, the first is that the existing lines will get all the money. Of the $9,000,000 per annum, the amount which the American Line can earn is $1,100,000, being the sum which passed the Senate in the original postal subsidy bill, but which was changed in the House. The amount which can be received by the ships of that company and all other 21-knot steamers hereafter built combined cannot exceed $2,000,000 a year. This leaves $7,000,000 for the lower speed freight ships. Certainly the Americans who have risked their money and given their brains and experience to this badly handicapped struggle for an American marine ought not to be punished for their efforts. The testimony conclusively shows that even under the present mail contracts the four fast ships of the International Navigation Company are run at a loss. If under this subsidy they are run at a large profit, with money in our country commanding lesser rates than anywhere else, with our capital active and seeking employment, there will be immediately placed with our shipyards orders for competing lines.

"The next objection is to high speed vessels. It is charged that they are not essential to the development of American trade with foreign countries. It has not been the characteristic of the American people to yield to each other, much less to foreigners, on a question of speed. It is not poetry or sentiment which inspires Germany to build the 'Kaiser Wilhelm der Grosse' in order to beat the record of the 'Majestic,' and to expend $3,500,000 to build the 'Deutschland' to excel in speed the 'Campania,' or which leads the most prudent of all investors, the French, to struggle so desperately to construct steamships which may equal, if not excel, the British and the German in quickness of passage across the Atlantic. In transportation speed is desired. It is the gauge by which peoples judge the maritime skill, genius and enterprise of other nations.

"The next question is that the bill does not give sufficient encouragement to the tramp steamer; in other words, to the slow or 10-knot or 11-knot steamship. Figures show that the excess of compensation under this bill to the 10-knot or 11-knot steamship over the cost of operation and maintenance is greater than for the high speed steamer. Neither the high speed steamer nor the tramp can find business except upon established routes, where commerce and intercommunication in trade are fixed. It is the middle class steamer of from 14 to 17 knots speed which builds up commerce. It carries few passengers. Its main cargo is freight—cereals from the farm and the heavy machinery from the factory.

"The subsidy under this bill covers only about one-quarter of the cost of maintenance and operation for any class of vessels. Therefore, every ship which derives benefits from the measure must hustle for cargo and succeed in getting it, or make its voyage at a loss. The subsidy works automatically in the promotion of an American marine. If by experience the compensation proves so large that there is an undue profit, immediately American capital puts more ships in commission and enlarges the merchant marine. If our merchant marine, by reason of its prosperity, grows beyond the amount which is appropriated, then it is distributed *pro rata*, with a diminishing compensation to each of the beneficiaries."

Probably a dozen set speeches of considerable length have been prepared and will be delivered, if time serves, either at day or night sessions. The extemporaneous debate, however, promises to consume much more time unless an agreement can be reached between the majority and minority for a vote. Negotiations are now on foot looking to this end, but it cannot be said that any progress worth noting has been made. The only declaration thus far secured from the minority is that the bill will not be "unreasonably debated." In view of the comparatively small amount of time that can be given to the subject in the intervals between the appropriation bills, it is a matter of individual judgment as to whether "reasonable debate" will be exhausted in time for a vote before March 4.

W. L. C.

The Drawback on Seamless Tube Billets.

WASHINGTON, D. C., January 29, 1901.—The Treasury Department has promulgated a series of regulations for the allowance of drawback of duty on imported steel billets used in the manufacture of seamless tubes for boilers and other purposes manufactured by the cold drawn process and intended for the export trade. Though issued at the instance of the Shelby Steel Tube Company of Cleveland, Ohio, other firms complying with their conditions are at liberty to avail themselves of the drawback privilege. The regulations are as follows:

On the exportation of seamless tubes for boilers and general engineering purposes, manufactured by the Shelby Steel Tube Company of Cleveland, Ohio, wholly from imported steel billets, by the cold drawn process, a drawback will be allowed equal in amount to the duties paid on the imported billets so used, less the legal deduction of 1 per cent.

The entry under which the merchandise is to be inspected and laden must show, separately, the mark and number of each shipping package, the number of lineal feet of tubing of each size and gauge contained therein, and the gross and net weight of each package, which must also be marked thereon.

The drawback entry must show the number of lineal feet and the net weight of each size and gauge of tubing exported, the aggregate weight, the actual weight of imported steel used in the manufacture of the same and the corresponding weight of waste incurred in the manufacturing process. The cost of the imported billets laid down at the works and the value of the waste at the works on the date of sale or closing the contract must also be shown in the said entry.

The said entry must further show, in addition to the usual averments, that the exported tubes were manufactured of material and in the manner set forth in the manufacturer's sworn statement and schedule.

In liquidation, the weight of imported billets which may be taken as a basis for allowance for drawback may equal the weight used in the manufacture, after deducting therefrom the value of the waste expressed in terms of the imported material used, figured according to the quantities and values of material and waste, respectively, declared in the drawback entry, but in no case shall the allowance for wastage be in excess of 40 per cent. of the net weight of the exported tubing.

Declared weights of the exported merchandise must be verified by a United States weigher, but the weights taken as bases of liquidation, for each size and gauge of tubing exported, shall not be more proportionate to length than is indicated by the weight per lineal foot for the corresponding size and gauge in the manufacturer's sworn statement and schedule hereinbefore mentioned.

W. L. C.

The Acme Sheet Steel Company of Martin's Ferry, Ohio, have bought the plant and business of the William A. List Company, manufacturers of iron and steel roofing, at Wheeling, W. Va. The interests of the two concerns will be consolidated.

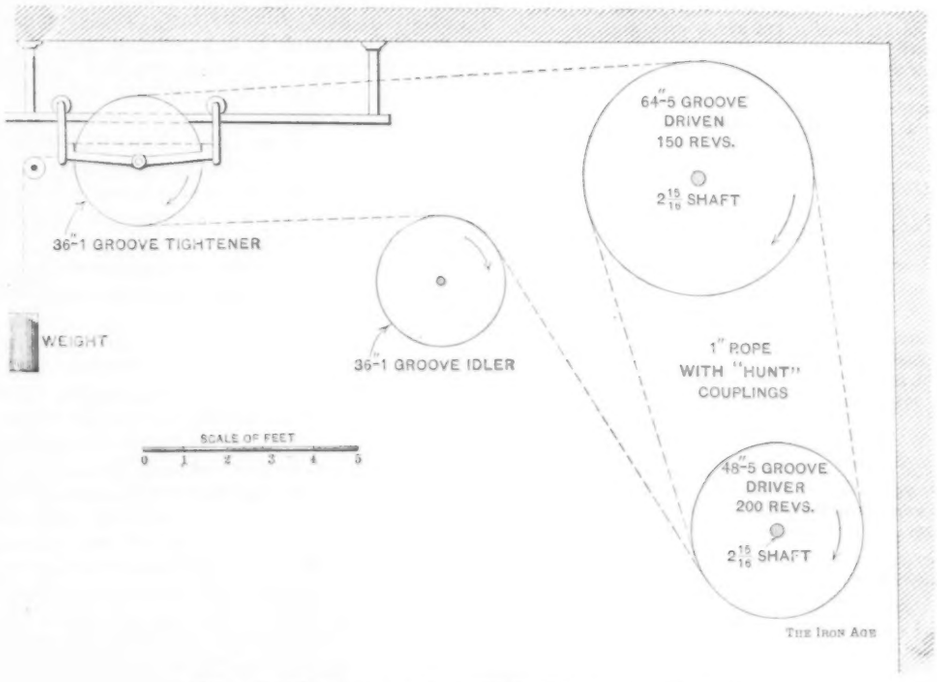
The Sharon Tin Plate Plant.

At a meeting of the stockholders of the Sharon Tin Plate Company, Sharon, Pa., manufacturers of tin and terne plates, held on Tuesday, January 22, it was decided to accept the proposition recently made by the American Tin Plate Company to take the entire output of the Sharon Tin Plate Company, paying market prices for same, less 2 per cent. for cash. The fact was mentioned in these columns some time since that such a deal was under way. This does not mean that the American Tin Plate Company have acquired the plant of the Sharon Tin Plate Company as reported, but have simply contracted for their output of the 20 mills. The contract with the American Tin Plate Company becomes effective from April 1, and is for a period of five years. At the meeting on Tuesday the Sharon Tin Plate Company decided to erect 50 modern dwelling houses to begin with, for the comfortable housing of the men who will be employed in the plant when in operation. By making this deal with the Sharon Tin Plate Company and acquiring the plant of the Champion Iron & Steel Company, at Muskegon, Mich., the American Tin Plate Company have taken care of practically all the competition existing in the tin plate market. It is true there are some small concerns who buy black plate and dip it, but their competition is not seriously felt. It may be noted in this connection that the American Tin Plate Company have announced that the price of tin plate will remain at $4 a box for second quarter.

We learn that the original ten-mill plant of the Sharon Tin Plate Company will be ready for operation about March 1, and work on the other ten mills will be pushed as fast as possible, and these are expected to be ready for starting up about September 1. The plant of the Sharon Tin Plate Company occupies 23 acres of ground, lying along the Pennsylvania lines at South Sharon. The plant will include 20 hot mills, 12 cold mils, 24 tinning pots, besides the two boiler houses, tin house, warerooms, &c. The hot mill building is 110 x 900 feet, cold mill 85 x 525 feet, tin house and warerooms 70 x 800 feet and other necessary buildings in the same proportion. Two Wheeler vertical water tube boilers of 1600 horsepower each, manufactured by the Sharon Boiler Works, furnish the necessary power to two 250 horse-power engines, which in turn furnish electric power for the plant. The entire plant is equipped with all the latest improved machinery and appliances for the manufacture of tin plate ready for the market. The company have their own machine and repair shops, so that they are not compelled to purchase elsewhere anything necessary for the prosecution of all their work on hand.

Aluminum Nails.

B. Mountain & Son, Limited, of Hunslet, Leeds, England, claim that after numerous experiments they have succeeded in making an alloy of aluminum which will compete with copper for the manufacture of nails, staples and tacks. Among the advantages claimed for the new material is that it is not affected by weather and will not deteriorate. It is pointed out that this quality should recommend the nails for use in laying roofs, lining tanks, &c., and also that, as the alloy is noncorrosive and non-poisonous, the new nails ought to find favor among makers of refrigerators and other articles used for food storage. Messrs. Mountain give figures to prove that, taking into consideration the difference in point of number and weight, the aluminum nails are about four cents a pound cheaper than copper nails. They are not intended to compete with the ordinary steel nails.



ROPE DRIVE AT THE BUILDERS IRON FOUNDRY.

Rope Drive at the Builders Iron Foundry.

The accompanying sketch shows a rope drive at the Builders Iron Foundry of Providence. The driving and driven shafts are so located that the most convenient location for the transmission was alongside the wall of the stairway. It was not desirable to encroach upon this space and therefore the entire outfit hugs the wall as closely as possible. The drawing shows the arrangement and gives the dimensions.

The Geo. A. Fuller Company of Chicago have been given the contract for the erection of the 20-story office building of H. C. Frick, to be built in Pittsburgh. The contract price is said to be between $1,500,000 and $2,000,000. According to present plans of the architect the building will have 410 offices, with a bank on the first floor, and will occupy the entire block bounded by Scrip alley, Diamond street, Grant street and Fifth avenue. It is to be built and owned by H. C. Frick alone.

The Government of Venezuela has notified United States Minister Loomis that a parcels post system will be established by the Republic on February 1.

The Warwick Iron & Steel Company.

The annual report of the Warwick Iron & Steel Company of Pottstown, Pa., has been issued to the stockholders. The following is the profit and loss account:

Profit and Loss Account.

CR.	
January 1, 1900, by balance	$113,207.87
December 31, 1900, by interest	7,909.38
December 31, 1900, by pig iron account, profits for 1900	152,550.35
Total	$273,667.60
DR.	
February 10, to dividend	$25,000.00
May 10, to dividend	25,000.00
August 10, to dividend	25,000.00
November 10, to dividend	20,000.00
December 31, expense items: Advertising, register fees, revenue stamps, stock certificate books, interest on new issue of stock	10,075.85
Depreciation iron making material, ores, &c	11,813.76
Rossie mines	5,279.44
To balance, surplus	151,998.55
Total	$273,667.60

The balance sheet is as follows:

Balance Sheet, December 31, 1900.

ASSETS.		
Real estate, including furnace plant and railroad sidings, equipment, farm of 114 acres, with mansion house, barn, &c		$772,774.62
Fire brick lining on hand for repairs to No. 1 Furnace		5,130.00
Iron making material, ores, &c		146,189.65
Pig iron on hand, 280.10 tons inventory		4,013.96
Bill receivable, notes		19,667.24
Cash in bank		244,060.13
Pottstown Iron Company, first and second preferred stock		4,449.70
Glasgow Iron Company, capital stock		2,262.00
Payments on new furnace		299,668.92
Book accounts receivable		91,138.89
Total		$1,589,355.11
LIABILITIES.		
Capital stock issued, full paid		$1,384,710.00
Profit and loss account, surplus		151,998.55
Relining account for repairs to No. 1 Furnace		9,588.86
Book accounts payable		43,057.70
Total		$1,589,355.11
CAPITAL STOCK.		
Authorized capital		$1,500,000.00
July, 1899, full paid stock	$1,000,000.00	
October, 1900, new issue for building No. 2 Furnace	500,000.00	1,500,000.00
Total subscriptions to new issue		$412,270.00
December 31, 1900, received on account subscriptions		384,710.00
Balance due on account		$27,560.00
Received since January 1		13,000.00
Balance due January 23		$14,560.00
Treasury stock unsubscribed, 8773 shares, par value		$87,730.

The annual report of the president, Edgar S. Cook, contains the following review, of general interest to the iron trade:

The earnings of the company for the year ending December 31, 1900, are as follows:

Pig metal account, net credit	$152,550.35
Less depreciation of raw material on hand and due on contracts	11,813.76
Balance, net earnings	$140,736.59

The above earnings represent the work of No. 1 furnace.

With the close of 1900 this furnace completed the fourth year of continuous operation, making a total of 245,958 tons to December 31. This tonnage exceeds any previous record of the Warwick Iron Company, and has probably not been surpassed by any merchant furnace east of Pittsburgh.

The product for 1900 was 53,786 tons, which shows a falling off as compared with 1898 and 1899, consequent upon the increased wear of the brick lining of the furnace and the fact that a larger percentage of foundry iron was made than in any previous year of the present blast. A larger daily product is possible with mill iron than with foundry iron.

Shipments of iron during 1900 amounted to 54,250 tons, or 463 tons in excess of the product, thus showing that the demand for the Warwick brand was sufficient to prevent any accumulation, notwithstanding that the falling off in the general consumptive requirements of the country, with the consequent rapid decline in prices, compelled the blowing out of many furnaces.

The fall in the market value of pig iron was unexpected and rapid. Our shipments averaged from

January to July	$19.47 per ton.
July to December	$16.08 per ton.

All raw material contracts for 1900 were based upon the assumption that iron values would be maintained at or about an average of $20 per ton. The serious and sudden decline in market quotations for pig iron came quite as unexpected and unlooked for as the rapid rise of 1899. Readjustment in prices of raw material and freight rates can only follow upon the blowing out of furnaces. This is a slower process. Every "boom" in pig iron has been followed by heavy losses before the readjustment between cost of manufacture and selling price is effected.

Lake Superior ore contracts for 1900 shipments were made about the middle of January, 1900. Orders were placed for 50,000 tons at then current prices, which were about $2 per ton above the basis for 1899. At that time we had on hand at furnace and still due on 1899 contracts 47,350 tons of Lake Superior ores. An average price was calculated and the furnace charged with same, commencing in January last. The average price of lake ore thus arrived at reduced our apparent earnings for the first half of the year, but was of material help in maintaining the earnings for the last half. It is doubtful whether the cost of lake ores delivered for the season of 1901 will be much lower than the average price per ton charged to furnace during 1900. Other ore used, however, can be replaced at lower cost than the stocks on hand and still due on contracts. Your management decided to estimate these ores, &c., at current values and charge off the depreciation against the earnings of 1900. It is considered fortunate that this depreciation does not exceed $11,813.75.

The construction of No. 2 furnace is proceeding as rapidly as could be expected, compared with other works of the same magnitude. Progress has been delayed by the failure of contractors to complete their contracts as promptly as agreed. This failure is attributed to delays in securing structural shapes, &c. It is impossible to predict with any certainty when our new furnace will be completed. If there is no delay with the machinery we hope that it may be gotten into operation by July next. All parts of the furnace are being constructed in the most substantial and improved manner. While such construction adds to the first cost, it is considered economical in the end, both as regards lower costs of operating and lessening charge of repairs. The cost of No. 2 furnace will approximate $750,000.

It is conservatively estimated that with the new furnace in successful operation the cost of converting ore into pig can be reduced at least $1 per ton, as compared with the conversion cost of No. 1 furnace for the past six months or more, and based upon the same cost of raw material. Assuming a yearly product of 125,000 tons of iron for the No. 2 furnace alone, a margin of profit of only $1 per ton would indicate an earning power of not less than 8 per cent. on our capital.

Notwithstanding the reduced demand for pig iron during 1900, and the accumulation of large stocks at many furnaces, we have had difficulty in supplying the demand for Warwick, so it is fair to assume that consumers have satisfactory reasons for giving preference to our iron. The maintenance of this high standard would seem to warrant the belief that the increased product of your No. 2 furnace can be marketed, and that by the time No. 1 furnace is repaired, after its long blast, there will be a demand for the product of both furnaces. With both No. 1 and No. 2 furnaces in successful operation the total yearly product should approximate 200,000 tons, depending, of course, upon the quality of fuel and ores used.

The Richmondt Electric Wire Conduit Company.—The Richmondt Electric Wire Conduit Company, 192 to 196 East Water street, Milwaukee, Wis., manufacturers of electro-galvanized wire conduit tubing, have been prematurely reported as proposing to remove their manu-

facturing operations to Waukegan, Ill. They have not yet reached a decision, but being obliged to increase their facilities, are looking for a suitable location. The company are not manufacturers of tubing, as erroneously reported, but purchase it from the regular manufacturers of tubing. They galvanize the exterior and enamel the interior, which is previously reamed to make it of uniform size and insure the absence of obstructions or scale. The threads of pipes and couplings are galvanized by their own process, making a perfect and continuous joint. It is stated that bending the tubing does not damage it, as the enamel cannot break from the interior, while the electro-galvanized exterior cannot be harmed by rough handling. The standard sizes made are from ⅛ to 3 inches.

Lake Iron Ore Matters.

DULUTH MINN., January 28, 1901.—Some figures have come to the eyes of your corespondent of late, and he has been permitted to see some cost sheets of mining and stripping operations for last year that are interesting, in that they show a lesser cost of mining by steam shovel than had been before figured, and a cost of stripping in large quantity of earth that is much less than any estimates of contractors in the past. The average contract rate for stripping on the Mesaba for some time past has been from 30 to 35 cents; several immense contracts are now under way at 32 cents. These cost sheets show a very large profit in the operation at this figure; it would be hardly right to say just how much.

Several new stripping jobs are now in the hands of contractors for figures, and it looks as though there would be as much done in this line the coming season as in any of those passed. Some of the work will be in the vicinity of the village of Virginia. This with what is now under way, and on which there is an immense amount of work to be done, will make stripping very active during the year.

The purchase of the Mansfield mine, Crystal Falls, by the Oliver Iron Mining company was the first step of that concern in that district. It is not impossible that it may be followed by more purchases. The company will improve the mine and develop it extensively. They are developing the Gogebic group under their control, the Norrie by a new deep shaft and by the extension of other shafts, and now at the Tilden they are reopening No. 10, which has been closed for months. The mine is in better shape for a heavy production than at any time in its history and is likely to beat its own record during 1901. This company's work on the Vermillion is by new shafts at the Pioneer and adjoining mines, that at the Pioneer being a very important and costly undertaking. They have just taken a lease of a tract adjoining and north of the Zenith, just east of the Pioneer, in which they have found high grade ore, for a 33 cent royalty and an additional payment of 8 per cent. on all money in excess of $3.50 that the ore brings at lower lake ports. This ore is of about the quality of Chandler, which sold the past year at $5.99. If it should sell in the present year at $5.50 the royalty on this new lease will be 49 cents, which is a new record for royalty rates in Minnesota. The Oliver Company are about to undertake an examination of some of the far Western ore fields, lying at a considerable distance from Minnesota.

On the Gogebic range the Palms mine is to be sunk to the deepest point of any on the range, ground having been broken at the bottom of No. 5 for an extension of 600 feet. The mine is looking well and has a great future. The Jackpot (Jones & Laughlins) is increasing its force. No. 1 shaft will be sunk to a depth of 700 feet. The mine will make a very considerable output this year, in marked contrast to what it has done in the past. The Jackpot never shipped prior to 1892, then a few tons, in all less than 5000, and was idle from 1897 to 1900, when the present owners took hold and are making a mine of it. The Mikado management has found a body of 65 per cent. ore at a depth of 600 feet. The Brotherton and Sunday Lake mines have held annual meetings at Duluth and re-elected the old management, Joseph Sellwood, president. The Brotherton, though it had a good year, paid no dividend, preferring to lay by a surplus and expecting to install some new machinery soon. The Sunday Lake declared $1 a share, or $40,000 on its $1,000,000 capital. This mine was in better shape than the Brotherton in one particular, as it started up in 1900 and had no ore sold for delivery that year on 1899 prices. The profit of the year at many lake mining properties was largely cut into by such sales.

On the Marquette range the Cleveland Cliffs Iron Company have securred all the Maas lands at Negaunee on option and have already started five drills thereon, hoping to find considerable ore. There are 200 acres and the lands are on the Regent formation. A flow of water at the Negaunee has called the bailers into use, and thrown out the miners temporarily. A little ore is being shipped off the range to local furnaces mostly. Gustaf Wallin, engineer of mines for the Luossavaara-Kelrunavaara Company, of Kiruna, Sweden, has been on all the lake ranges the past few weeks, and says he considers the Marquette mines the richest in the world, and far ahead of the Mesaba, which is somewhat of an odd view if Mr. Wallin saw the Mesaba as a whole. The Champion Iron Company are making a lot of expensive surface improvements.

On the Mesaba the Columbia Iron Company have been formed to operate the Wyoming property in the village of Virginia, a Bessemer mine of moderate size taken under option by H. Roberts last year. The Chisholm Iron Company have started machinery to open their mine of Bessemer and non-Bessemer ore near Hibbing and expect to ship this year in a small way. The Stevenson is mining heavily for a new property and will be a large shipper during the year. The Eveleth group is very active, so much so that its monthly payroll is now about $125,000. The Adams is doing a greater work than in any past year and will be an immense shipper this year. It has 900 men at work now. The Duluth & Iron Range road has given up the idea of improving its docks this winter, and will concentrate its new work for the present in the new harbor at Burlington Bay.

On the Menominee the Aragon is locating a new shaft with the diamond drill. E. F. Bradt and others have taken an option on lands that the Manila Iron Company abandoned some time ago, and have great hopes of finding a mine. They know, in fact, that they have ore in some quantity. The Manila Company threw up the option on account of orders from New York, and some friction was aroused thereby. Labor on this range is somewhat scarce and is not of the best quality, so mining men figure out a higher cost than last year.

The Cleveland Cliffs Iron Company have completed the plans for a new charcoal furnace to be erected at Marquette, and to be of about 175 tons daily capacity. The company have been gradually strengthening their position in ores and woodlands for this purpose, and for other ideas they have in mind, for some time, and now control an immense acreage of both. They have completed and tested the carbonizing works described briefly in this correspondence some months ago, and find them to work well. These kilns are shells of steel into which the wood to be charred is put, the capacity of the shells being five cords, and the heat is external, slack coal being now used for the purpose. The wood is charred very quickly and the saving of the by-products is quite complete. The company get 3½ gallons of wood alcohol, 200 pounds of acetate of lime, and a considerable volume of other products of more or less present value from each cord of wood. With the new works in full operation and with the extensions planned their alcohol production will be very large. The company have large deposits of ores too low to stand shipment, and are adding to this tonnage, and will utilize these ores in their own furnaces now begun and planned for the future. The result of their work will be to place this company in the front as a producer of charcoal iron and to make them a very important factor in many lines. The new Marquette furnace will be up to date in all respects, and will make its iron at less cost than any charcoal furnace in existence, this at least being the expectation.

D. E. W.

The Jones Mixer Patent.

The Position of the Defense.

WASHINGTON, D. C., January 29, 1901.—The detailed defense of the Cambria Iron Company, in the action brought by the Carnegie Steel Company for the alleged infringement of the Jones mixer patent, was developed in the argument of the case in the United States Supreme Court during the past week and is of special interest throughout the trade owing to the fact that mixers closely approximating that claimed to have been covered by patent are in general use. In support of a general denial of the charges of infringement the defendants made the following statement as to the previous condition of the art at the time of the granting of the so-called Jones patent, and the general use of an intermediate reservoir:

"The petitioner's witnesses and counsel assert with the utmost aggressiveness that the Jones patent, upon which this suit is based, is for an invention lying at the base of, and practically the key to, an advance in the art of making Bessemer steel which they claim to be of almost as much importance as the original invention of Sir Henry Bessemer. It is, indeed, this alleged importance in the invention in controversy which formed the principal basis of the petition for the writ of certiorari upon which the case has reached this court.

"The alleged departure or new development in the art of making Bessemer steel is the use in the Bessemer converters of molten pig metal drawn from the blast furnaces in which it is smelted instead of the use of the same pig metal after it has been allowed to cool in pigs and remelted in cupola furnaces.

"The petitioner's claim is a startling one in view of the indisputable facts of the case, because the use of the metal direct from the blast furnace was (1) recommended in Sir Henry Bessemer's original patent; (2) the universal practice from the very inception of the Bessemer process on the Continent of Europe; quite generally in use in England beginning with the early 70's, and used in this country on a large scale by the Illinois Steel Company and this petitioner beginning in 1882.

"But the petitioner waives aside the proof as to the extensive prior use of the so-called direct process, asserting that it was all very unsatisfactory and of no particular advantage over the use of remelted metal until Mr. Jones made and introduced his invention at the works of the Carnegie Company. The introduction of the so-called Jones mixer they tell us gave an impetus to the direct process which removed it from a comparative basis with the so-called indirect process, to wit, the use of remelted metal.

"That the petitioner exaggerates with regard to the advantages of the use of direct metal even under present conditions, and that the use of the remelted metal is still on a competitive basis with regard to it, is, we think, manifest by the fact that remelted metal is still used on an enormous scale, not only generally throughout the country, but even in the works of the petitioner and in the works of the defendant company, the petitioner itself making millions of tons (2,000,000 tons at Duquesne and 1,696,037 tons at Homestead), extending through a period of ten years after the grant of the Jones patent, which, on the basis of 65 cents per ton, the advantage claimed by petitioner, would have saved Carnegie over $2,000,000.

"It is no doubt true that the use of direct metal in connection with an intermediate reservoir is advantageous over such use without the reservoir, just as this practice proved better with cupola metal (Jeans on Steel, page 368), showing that in the early 70's the English manufacturers only obtained from 12 to 15 blows or operations of the converter in 24 hours, while the American manufacturers who were using the cupola ladle obtained about 20 blows.

"But the petitioner claims that under the direction of Captain Jones it was the first to use a large intermediate reservoir to receive metal directly from the blast furnaces and furnish a supply to the converters; and it is this claim which unquestionably impressed the learned Judge of the Circuit Court, and led him to construe the Jones patent with disruptive expansiveness. This priority of actual use forms the whole substance of petitioner's case.

"It is not asserted that Jones performed any inventive act in conceiving of or erecting an intermediate reservoir, such conception being venerable in the art, as shown, for example, in the Deighton English patent and Witherow United States patents, the Whitney practice; the function of such devices, both as places of storage and means of mixing and averaging up the pig metal, whether drawn directly from blast furnaces or remelted in cupolas, had been carefully studied and formed the subject of numerous patents and publications.

"Oviously, therefore, the only room for invention lay in devising a peculiar and novel mode of using the intermediate reservoir, and the fundamental inquiry in this case is, therefore, what is the particular mode of use specified and claimed as a new method in the patent in suit?

"Petitioner's witnesses and counsel, with constant reiteration of the unimportant fact that Jones was the first to erect an intermediate vessel for use with blast furnaces, described the practice with this reservoir as now followed both in petitioner's great works and those of respondent, and claimed that this practice was the invention of Jones and covered by the second claim of his patent.

"Respondent's position is that the modern use of the intermediate storage reservoir is utterly different in the most vital particulars from the mode of use described in the Jones patent, so different that it is not even suggested in the specification; that it is absolutely inconsistent and incompatible with the use described and claimed therein; that the modern use, if subsequently patented, could not be held to be anticipated by anything described in the Jones patent, although it would be anticipated by publications prior to the Jones invention. This modern use of a reservoir is precisely the thing carefully distinguished from the Jones process in the prosecution of his application for patent, and in effect disclaimed. Further, at the time Captain Jones developed the invention he described and illustrated its true character to Mr. Carnegie, called as a witness for petitioner, in such way as to clearly mark its absolute difference and inconsistency with the method now used by both parties to the case.

"In fact, the position established by the patent and the evidence of the Patent Office correspondence and the testimony of Mr. Carnegie, to whom Mr. Jones explained his invention, is that the modern and present mode of use was not contemplated by Captain Jones when he took out his patent and was not then considered by him except as a pre-existing method to be discriminated against and distinguished. The only alternative to this position is the finding that if Captain Jones actually contemplated and intended the use of the reservoir as it is now used, he deliberately suppressed and concealed this idea and intention and certainly if it is not disclosed in the patent it cannot be covered by its claims. . . .

"We deny that our method of using our reservoir infringes upon the Jones patent, because we admittedly do not mix the pig metal in such a way as to produce from the reservoir mixed pig metal of substantially uniform character in its non-metallic constituents—viz., silicon and sulphur—and because such admixture of the metal as is produced in our reservoir is only such as is necessarily incident to the use of an intermediate reservoir for storing the metal, said reservoir being arranged to receive the metal as it is produced from the furnaces and to hold it until it is required for the converters.

"The petitioner claims that we do infringe the patent because, while our use of the reservoir admittedly does not produce uniform pig metal, it does, to a certain extent, prevent sudden variations in the composition of the metal drawn off for use in the converters, and thus, while not producing uniform iron or uniform steel, affords a guide to the operatives of the converter by which they are enabled to carry on the process of Bessemerizing with less trouble and less liability to make defective batches of steel than would be the case if they were using the metal as it came from the furnaces instead of after it had been stored in the intermediate reservoir.

"Respondents have shown that the mixing of molten metal, either direct from the blast furnaces or remelted in cupola furnaces, was a common practice for 40 years prior to the Jones invention, and had been fully described both as a special means of making the metal uniform and incidentally in connection with the storing of metal in reservoirs until it was needed for use. The following instances are among those proven in the case:

"At the Whitney Car Wheel Works, Philadelphia, commencing in 1847, to get uniformity of composition the metal was tapped at intervals from three cupolas into a large reservoir, permitted to mix and even up in it, and small charges withdrawn to be cast into car wheels, the reservoir being maintained at least half full.

"In Kirk's 'Founding of Metals' is described the use of this large ladle or reservoir so arranged that the iron can run into it from the cupola as fast as it is melted and mixed therein, the mixed metal being poured into smaller ladles and the mixer never emptied.

"In 1856 the Taberner British patent described the use of a number of small smelting furnaces and the collection of the molten metal therefrom into a large reservoir, from which the molten metal was drawn for casting. This treatment, of course, necessarily included the incidental mixing of the metal.

"From the beginning of the Bessemer art in America, extending back earlier than 1870, every American works employed an intermediate reservoir to receive the metal from a number of cupolas and maintain a supply for the converters, the ladle holding in some cases two and one-half times the converter charge, so that a remainder was left after pouring off the charge, and the incoming metal mixing with the remainder in the vessel. At Lackawanna they used the ladle for both converters and foundry casting.

"Blast furnace metal had been used abroad since 1857 for making Bessemer steel, and as early as 1871, at the Terre Noire Works, they mixed it by taking half the converter charge from one furnace and half from another, it being stated that they 'always obtain a mixture of the metals, and therefore the greatest regularity is secured to the rest of the work.'

"In 1872 the Deighton English patent described the process of the use of a large mixing vessel to receive the metal from several blast furnaces and mix it so as to obtain a more uniform quality of metal for the converter, the practice outlined necessarily involving, we think we have shown, the maintenance of a remainder in the reservoir.

"The advantage of the use of an intermediate storing and mixing reservoir over the cupola ladle reservoir with blast furnace metal to be Bessemerized was early recognized both in this country and abroad. For example, Mr. Holley in 1877 described their intended use at the Vulcan Works, at St. Louis, and Mr. Snelus in 1878 described the employment of this ladle to take the metal from the blast furnace as being 'of considerable importance, both for saving time and for facilitating the admixture of iron,' its purpose being 'to receive the metal from the blast furnace and hold it in readiness so that at a moment's notice you could take your iron into the converter and also obtain a better mixture.' The same idea of the use of the reservoir extended throughout the report made in 1877 by Mr. Holley to the steel makers in America, as hereafter fully discussed.

"Direct blast furnace metal was first used in this country for Bessemerizing in 1882 by the Illinois Steel Company, who were quickly followed by the Carnegie Company, who continued for five years, handling 940,049 tons. They carried their metal in large ladles to the converters, sometimes filling the ladles from two or more furnaces. This practice of using direct metal and mixing it continued with the Illinois Steel Company until 1892.

"The Witherow American patents of 1885 describe and claim the use of large reservoirs between the blast furnaces and converters for the specific purpose of storing the metal tapped at long intervals from the furnaces and supplying the metal at short intervals to the converters.

"Saving only the short use of the Jones method as patented at the Carnegie works, no one in the steel business has ever undertaken to mix the molten metal to a substantially uniform composition, therefore the Jones invention as patented, even if it were new, has no place in the development of the art of mixing metal as applied in steel manufacture, save as an unsuccessful and rejected expedient."

The present expectation is that the Court will render a decision in this important case, involving both the validity of the Jones patent and the extent to which it covers modern methods of mixing molten metals, at the present term, which will not expire until June 1 next. As all the issues involved in the case are pending in this action this long standing controversy will thus be finally determined. W. L. C.

Pacific Coast News.

SAN FRANCISCO, CAL., January 21, 1901.—The business of the year has opened up auspiciously, especially in the line of metals and hardware, for which there has been a big demand and which said demand still continues. And this despite the fact that January is one of the dull months of the year. Of course the outlook at this season is determined principally by the weather and the prospects for the crops. These could hardly be better at present writing, although the rains, which at times have borne the character of storms, have prevented the sowing of grain, except on the sandy uplands. One feature of the rains of the year is that they have extended to Southern as well as Northern California, which is thus assured good cereal crops as far as it can be at this time of year. The rains, of course, have interfered more or less with business. They are now falling heavily, and during brief intervals in the past 48 hours have partaken of an almost cyclonic character.

There continues to be great activity in the ship yards, foundries and machine shops of the city. The present year promises to be the most prosperous that these industries have ever witnessed. There are at present employed in them, or soon will be, not far from 10,000 men and boys, and their products this year will not fall short of $10,000,000 in value. Of course, a very great proportion of this represents shipbuilding, and the greater part of that the building of vessels of war for the Government. Most of the materials needed in these various factories, foundries and shipyards comes from the East by rail, comparatively little arriving by water. The arrivals of pig iron for the year despite the great activity was only 11,739 tons. This was also about the amount of the consumption, leaving the stock on hand by the close of the year about 3000 tons. The reason for the comparatively small quantity of pig iron used must be looked for in the exceptionally good quality of the scrap to be had in this market. That used during the year consisted largely of shells, cannon balls and cannon, some of the latter being almost as good as pig. A great deal of the scrap, too, consisted of the disused machinery of the Comstock mines, a large proportion of which had been made from the Salisbury brand of pig iron. Every variety of pig iron sold in the markets of the world almost can be purchased here in San Francisco—about 55 different descriptions. Hence it is that castings of every description and for any purpose can be had in our foundries. San Francisco is more favored in this respect than probably any other American or European city. There was considerable English pig iron imported into this market, especially during the past six months, but most of our supply was American, by sea and rail, very little by the latter mode of transportation. About 15,000 tons came from the Orient, all of it, however, American pig iron that had gone there as ballast. Pig iron in 1900 in San Francisco reached the highest price that it had commanded during a long series of years. It was held at $30 during the first five months of the year, and then concurrently with the decline in the East it dropped to $25 to $27, which was the price during the remaining months of the year.

In the matter of tin plate, most of the stock on hand is held by consumers who buy from the combine as they need it. The Eastern tin plate mills have a very good market on this coast. Some people here are strongly in favor of a reduction in the present tariff. I shall refer to this on another occasion. J. O. L.

Niagara Falls Power.

The installation in the second section of the power house of the Niagara Falls Hydraulic Power & Mfg. Company has been completed. This power house is located at the water's edge in the gorge, the water supply being derived from a surface canal extending from the upper river to the edge of the high bank, the water being conducted from a forebay to the power house below by huge penstocks. In the first section of the station there are four turbines made by James Leffel & Co. of Springfield, Ohio, and these turbines operate eight generators.

The turbine installation of the second section consists of five wheels, three of which were made by R. D. Wood & Co. of Philadelphia and two by the I. P. Morris Company of the same city. The wheels are arranged in a row, the first, fourth and fifth being the R. D. Wood turbines, and the second and third the I. P. Morris wheels. The first wheel is of 3500 horse-power capacity. It is connected to a 700-kw. alternator generator of Walker make and supplies the Buffalo & Niagara Falls Electric Light & Power Company. On the other side it has an 875-kw., 175-volt d. c. generator of General Electric make, which supplies the National Electrolytic Company, manufacturers of chlorate of potash. The second wheel has a capacity of 2900 horse-power. On one side it is connected to a 1000-kw., 300-volt d. c. machine of General Electric make, and this supplies current to the new plant of the Acker Process Company, makers of caustic soda and bleaching powder. On the opposite side this second wheel is connected to a duplicate of the National Electrolytic Company's machine above referred to, which supplies the same company. Turbine No. 3 operates two direct current 1000-kw., 300-volt machines that supply current to the Acker Process Company. Wheels No. 4 and No. 5 operate two generators of 800 kw., 300 volts, direct current, of Westinghouse make, which supply curent to the lower works of the Pittsburgh Reduction Company.

The third section of this power station has been built and is now being prepared for the installation, which is to be put in with all possible rapidity. A third new penstock, 11 feet in diameter, is being built from the station to the forebay by Struthers, Wells & Co. of Warren, Pa. The water that will flow through this third penstock will supply five additional turbines, to be placed over the five 60-inch valves now in place under the power house floor. These five turbines have been ordered from the I. P. Morris Company of Philadelphia. Of these five new wheels, four of them will be devoted to the operation of eight generators of Westinghouse make, and which will supply current to the Pittsburgh Reduction Company. The fifth wheel will be connected to two 1000-kw. three-phase alternating current generators for power purposes, the product of which has all been contracted for.

When this third section has received its installation the power house will have been completed in accordance with the original plans. It is understood that the Niagara Falls Hydraulic Power & Mfg. Company will then direct their attention to the erection of a new power house in the gorge, at the water's edge, a few hundred feet below the site of the present station. This will necessitate the extension of the canal basin some distance to the north of its present northerly end, but the power company have ample land space to do this. In order that there may be ample water for this extension, the company are preparing to widen their canal to the upper river the coming spring. The right of way owned by the company along this canal is 100 feet wide, but it is only in sections that the canal has been extended to this width. Recently the Niagara Falls Hydraulic Power & Mfg. Company have notified the Erie Railroad to remove their long train shed running along the north side of the canal between Second and Third streets, in order that the waterway may be extended to its full width at that point, the width heretofore having been but 70 feet. The Erie Railroad have already acted and have taken down their shed, having purchased a new depot site a block or so to the east.

The Mexican Outlook.

DURANGO, January 24, 1901.—It is a matter for regret that at a time when business conditions in the United States are so prosperous and surplus capital is seeking an outlet, reports sent from Mexico by irresponsible correspondents should reflect injuriously upon this republic's financial status. It is to be regretted from the point of view of the capitalist who has placed his money in Mexican enterprises, of whatever character they may be, and also from the standpoint of the prospective investor, who by such wholly baseless reports may be led to reconsider his decision and thus debar himself from participating in a field of investment wherein the promise of earning large profits is based upon perfectly legitimate indications.

According to the dispatches sent out, chiefly by correspondents in border towns, Mexico is suffering from an acute monetary stringency which is almost paralyzing her business activity and whose effects, if a remedy is not speedily found, are likely to bring ruin to such American investors as have been led to place their money in her mines, plantations and manufacturing enterprises. As a fair sample of these reports we quote a dispatch of recent date from El Paso, a town surely near enough to Mexican territory to justify the expectation of accuracy in a matter so vital to a nation as the condition of its finances. The dispatch says:

"In spite of the efforts of the Government and banks of Mexico to keep down alarm about the financial condition of the country, the situation is becoming more alarming every day. Since the Guadalajara Bank failed for $2,000,000, the alarm has spread over the country and silver cannot be had now at any price. The notes of many of the banks yet bring silver on demand, but not in large quantities, and no loans of consequence are now being made."

Commenting upon this dispatch the Mexican *Herald*, an able and well informed journal, after administering a merited rebuke to the author of the "scare," says:

"There is a tight money market here; the rate of discount has been advanced; the cotton textile interest is depressed, but general business is going on quite as usual. Imports, to repeat what we have already said, are keeping up to the standard and the stamp taxes yield good returns."

As the same journal points out, the bank to which the correspondent refers was a private affair. Its suspension no more reflects the national financial condition than the failure of a New York or Chicago banking institution managed by private individuals would reflect the monetary status of the United States.

As an offset to this bank failure and as a better reflex of the condition of Mexican business and finance attention may be called to the recent action of the National Bank of Mexico. This institution a little while ago paid a dividend of 12½ per cent. upon a paid up capital of $16,000,000. The total dividend paid by the same bank in 1899 was 17 per cent. upon the capital. It is expected that the profits of the current year will exceed this handsome figure.

The management of the nation's finances is in the hands of able men—indeed, the Government presided over by General Porfirio Diaz is in all its departments a model one, and it may be depended upon to meet and overcome any obstacle to the nation's continued prosperity, even though it be of a more serious nature than temporary financial stringency unduly exaggerated by enterprising Western "journalists." J. J. D.

The Northern Pacific Railroad Company have ordered 4250 cars from the American Car & Foundry Company, for delivery within the next few months. The order consists of about 3000 box cars, 800 flat cars and 450 coal cars and involves an expenditure of about $3,000,000.

The Chilian Government has placed a large order of steel and fish plates with the Carnegie Steel Company and an order for 400 freight cars with another firm. Both are subject to the inspection of Price & Virgin of Baltimore, Md.

The Iron Age

New York, Thursday, January 31, 1901.

DAVID WILLIAMS COMPANY, - - - - - - PUBLISHERS.
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JOHN S. KING, - - - - - - - - BUSINESS MANAGER.

The Iron Age Index.

The Index to the reading matter of Volume LXVI of *The Iron Age*, for July 1 to January 1, 1901, is now from the press, and will be mailed to those subscribers of *The Iron Age* who will make application for it.

In order to relieve those who bind or file *The Iron Age* of the trouble of future applications for the semiannual Index, we shall prepare a special list to whom in the future the Index will be forwarded without further notice.

Rails and Other Rolled Forms.

The iron industry has been called the jumping jack of trade, a term which, while justified to a certain degree, has been objected to on the score that it creates the impression that it is a particularly hazardous and uncertain branch of manufacture. Now, it has always been a reproach, leveled by European iron makers at the American producers, that they allow such violent fluctuations to take place. The fact is forgotten that the development of this country has progressed by leaps and bounds and that the largest customer of the industry, the railroads, have undergone extraordinary vicissitudes. That influence is still the dominant one undoubtedly, but it is not as generally understood as it ought to be, even in the iron trade, that the rapidly fluctuating requirements of that one interest do not as completely sway the course of the markets as once they did. As a matter of fact, the demand has become much more diversified, and for that reason is likely to show much more stability than in former years.

We know of no better means of illustrating this than to compare the annual production of rails with the annual output of other forms of rolled iron and steel. Below are the figures:

Year.	Production of rails. Gross tons.	Production of other rolled iron and steel. Gross tons.	Ratio.
1886	1,591,608	2,732,092	1.72
1887	2,139,640	3,096,066	1.45
1888	1,403,700	3,213,649	2.29
1889	1,519,216	3,723,890	2.45
1890	1,881,720	4,226,853	2.24
1891	1,307,176	4,083,787	3.12
1892	1,551,844	4,613,970	2.97
1893	1,136,458	3,839,227	3.38
1894	1,021,772	3,766,035	3.75
1895	1,299,628	4,909,946	4.00
1896	1,122,610	4,393,831	3.91
1897	1,647,892	5,353,836	3.25
1898	1,981,241	6,532,129	3.29
1899	2,272,700	8,084,697	3.55

A glance at these columns teaches how extraordinary have been the fluctuations in the production of rails. From 1887, when it rose above 2,000,000 tons, it dropped over 700,000 tons in one year and fell to a little over 1,000,000 tons in 1894, to approach the 2,000,000-ton mark closely in 1898 and pass beyond it, to the maximum, in 1899. If there be a jumping jack in the trade, surely the rail trade is entitled to that distinction.

The column showing the production of other forms of rolled iron and steel exhibits a growth which, while not free from extraordinary changes, does, on the whole, prove a fairly steady increase. It is due partly, so far as the earlier years are concerned, to the driving out of foreign iron and steel products from our home markets, the last being the tin plate trade, followed in recent years by the development of a rapidly growing export trade in finished products. But above all it is the result of a very great expansion in the domestic demand created by the substitution of cheap steel for a variety of other materials of construction. We need only point to the employment of structural shapes and of sheets and plates in building operations, and to the more recent use of steel in car body construction.

With the diversification of the industry and with the expansion of its markets the iron industry is bound to develop more and more a tendency toward steadiness in the demand, and it will be helped in that direction by the principle now so universally being adopted of controlling the principal lines from the ore and fuel up to the finished product.

Conservatism in Stocking Up.

The rapid and widespread dissemination of commercial intelligence in these latter days is productive of great changes in sentiment within short spaces of time over almost the entire country. It takes the news of weakness in any manufactured product very few days to reach a buyer in an obscure hamlet remote from any trade center. Surprise is frequently manifested by manufacturers and wholesale merchants at the knowledge of trade movements and tendencies displayed by customers whose location would seem to bar them from securing fresh information. But so complete are the modern agencies for disseminating trade news, and so quickly is it placed in the hands of the people that the country as a whole is kept well informed on all developments. Consequently a wave of timidity among buyers can in but a day or two sweep all through commercial circles, while at another time all will simultaneously be seized with a disposition to anticipate the requirements of the future. It has been said by men of large business interests specially entitled to advance information that within 24 to 48 hours all their customers would be found in some way to have been advised of any important movement, even though far removed from centers of population or of commerce. Under such conditions it is particularly difficult for those who carry stocks of manufactured goods to dispose of a surplus quickly in case of a sharp change in market conditions. The expected buyer may be found prepared either to insist upon much lower prices or to wait until he is sure that he is being offered bottom rates.

This improvement in means of information among buyers and consumers is one of the causes of the prevailing disposition of distributers of manufactured goods to carry light stocks. They believe it safer to conduct business on a comparatively narrow margin of profit and forego a possible larger profit in the appreciation of values of a large stock. Some years since the hazard would have been readily taken under such conditions as now exist, as information relative to weakness in prices or other unfavorable trade developments was disseminated so slowly that sufficient time elapsed to make a reasonably successful effort to unload. Although the prospects at present are bright, and the demand for all kinds of manufactured goods is expected to be exceptionally heavy as spring approaches, those who are making preparations in the way of increasing stocks are comparatively few. In quite a number of branches of trade this leads to considerable inconvenience, as good

stocks should always be available to meet an occasional increase in the demand due to some special cause. But neither dealer nor manufacturer is prepared for a sudden expansion in the demand, and long delay ensues in waiting for an order to be run through the factory. This is annoying, but it will continue either until prices appear to be firmly anchored at their present level or decline to a point from which no further drop will be feared.

The American Steel & Wire Company.

Under date of January 29 the following circular was issued to the stockholders of the American Steel & Wire Company, signed by William Edenborn, Alfred Clifford, J. W. Gates, Thomas Dolan, John Lambert, I. L. Ellwood and William P. Palmer, the Executive Committee:

"When we issued to you our first annual statement one year ago, the outlook for the immediate future as to prices and volume of business warranted the prediction of a most prosperous year, but much to the disappointment of all, the volume of business in the first quarter of the year proved to be only one-half what was anticipated, and the result was an accumulation of stock so heavy that in April it was found necessary to very largely reduce our prices and close, for a time, several of our mills, that our accumulated stocks might be worked off. As our company were then a large buyer of both pig iron and billets, we necessarily had on hand and under contract a very large tonnage upon which the company were obliged to stand a large shrinkage in values when the price of Bessemer pig iron and of steel billets declined fully 50 per cent.

"Fortunately the volume of business for the last six months gradually increased, and we have been able to work off this overstock, and we enter the new year with all old stocks cleared away and our order books well filled with business at very satisfactory prices. The outlook for the coming year is certainly favorable, and as prices are now upon a normal level we have no reason to fear a repetition of last year's experiences.

"We are now producing nearly all of our own requirements in pig iron and billets, and so are no longer subject to fluctuations in the prices of our raw materials.

"Our net profits for the year ending December 31, 1900, were $7,002,129.14, after marking off for depreciation $1,000,000, and expending large sums in maintenance and improvements, and marking down all inventories as required by the market prices of December 31, 1900. While this amount is considerably less than our earnings for the year ending December 31, 1899, we are inclined to believe that when the changed conditions of the market are taken into consideration our stockholders will feel well satisfied with the results shown.

"As the company are now the owners of iron ore mines on Lake Superior it was deemed necessary by the Board of Directors that we also become independent of possible freight combinations in transporting ore to our furnaces, and looking to this end the directors have negotiated for the purchase from the American Steamship Company of 12 large steel boats of a capacity sufficient to carry practically all of the ore used by this company. This purchase was made by the guarantee on the part of the American Steel & Wire Company of 20 year 5 per cent. sinking fund bonds to the amount of $5,630,000 (this being the entire purchase price), secured by a mortgage on the boats purchased. Based upon the average lake freight rates for the past ten years, we predict that this fleet of 12 steamers will earn annually at least sufficient to pay the interest upon the bonds and provide for a sinking fund sufficient to retire all of these bonds before maturity, thus leaving the American Steel & Wire Company the owner of the entire fleet, free from incumbrance, and without the investment of $1.

"Since the organization of the company there has been expended in the purchase of new property and in construction of new works the sum of $13,440,715.76.

"Finding it unwise and inexpedient to declare dividends payable a full year in advance, the by-laws of the company have been so amended as to enable the Board of Directors to act upon the question of dividends on both the preferred and common stocks quarterly, beginning next March.

The circular is accompanied by the following:

Balance Sheet, December 31, 1900.

ASSETS.

Real estate, buildings, plant and machinery		$85,289,766.90
Investments and advances to subsidiary companies		6,138,616.82
Bills and accounts receivable		5,666,141.47
Inventories		10,623,079.19
Cash		2,220,657.57
Total		$109,938,261.95

LIABILITIES.

Capital stock: Preferred	$40,000,000.00	
Common	50,000,000.00	
		$90,000,000.00
Bills payable		2,766,947.95
Accounts payable, &c.		3,331,655.13
Reserves: Depreciation	$2,000,000.00	
Bad debts, discounts, &c.	200,000.00	
		2,200,000.00
Profit and loss account:		
Balance December 31, 1899	$10,062,529.73	
Add profit for year ending December 31, 1900	$8,002,129.14	
Less depreciation	1,000,000.00	
	7,002,129.14	
Total	$17,064,658.87	
Deduct dividends paid:		
Preferred	$2,800,000.00	
Common	2,625,000.00	
	$5,425,000.00	
		$11,639,658.87
Total		$109,938,261.95

The profits in 1899 were $13,362,530 and $1,200,000 was written off. In that year the dividends on the common stock were $3,500,000 and those on the preferred $2,800,000, leaving a surplus of $5,862,530. The bills receivable show a decline of $2,581,079, the inventory a decline of $372,367 and the cash a decline of $1,004,636. The accounts payable increased by $1,199,185.

Large Orders for Coal.—Probably the largest order for coal ever taken for shipment through a single purchaser has just been consummated by the Monongahela River Consolidated Coal & Coke Company of Pittsburgh selling to a New Orleans agent and shipper 200 coal boats, averaging 25,000 bushels of coal each, and which is for export trade. The total amount of 5,000,000 bushels was taken at a price ½ cent a bushel higher than the average prevailing price last year in the New Orleans market. The coal is all to be sent to that point, thence to be reshipped on ocean vessels to foreign ports. More coal was shipped by the above named concern between October 31, 1900, and January 31, 1901, than during all of last year. Export trade is to take a large portion of this, and in the future is to be more of a feature than it has ever been. Agencies are being established in the various European cities with this end in view, and which are expected to bring large business in the future.

The Pressed Steel Car Company of Pittsburgh, who some time ago took contracts from English competitors for 167 pressed steel hopper gondola cars, 60,000 pounds capacity each, for the Rand Mines Company, at Cape Colony, South Africa, have begun shipment of the finished cars to that place. The first consignment of 30 cars was sent some days ago; another shipment of 30 cars was made on Tuesday, and at the end of this week the remaining 107 cars will be sent to Jersey City wharfs, awaiting shipment on their long trip to Cape Town. The Rand Mines Company originally ordered 334 steel cars, half this number being given to the Pressed Steel Car Company and the other half to an English concern. The cars built in Pittsburgh will reach their destination far ahead of those built by the English firm. The Pittsburgh cars were built with such dispatch that other business from across the Atlantic is expected to follow.

Armstrong Bros. Tool Company.

The Armstrong Bros. Tool Company have found it necessary to secure increased manufacturing facilities and have therefore removed from their old location at 82 Edgewood avenue, Chicago, to the manufacturing building at 617 to 621 Austin avenue, Chicago. They occupy an entire floor of this building, which gives them a space of 75 x 125 feet and permits them to double their capacity. They have added to their equipment four drill presses, a milling machine and two lathes, and are having a special grinder made for grinding cutters. They have put in one of the Chicago Flexible Shaft Company's gas furnaces for tempering steel and are also adding a case hardening furnace. Heretofore their case hardening has been done by outside parties. They have further added a band saw and circular saw and will hereafter make their own boxes for shipping. They now have an equipment comprising altogether 50 pieces of machinery.

The entire space is devoted to the manufacture of the Armstrong tool holders. The company began just ten years ago to manufacture their own patent tool holders, and for the first five years their progress was very slow, so that quite a small number of men was ample to turn out enough to meet the requirements of their trade. The last five years, however, have been marked with great success and their business has in this period increased rapidly. They have up to this time sold nearly 300,000 of these devices and they have gone to all parts of the world. They now manufacture about 75 sizes and shapes of tool holders and can furnish a tool for almost any job of lathe or planer work. The largest turning tool they now make takes a ¾-inch square cutter but they are arranging to get out one with an inch cutter.

The method followed in the manufacture of these tools is the employment of a jig for every operation. In the manufacture of a tool holder it is obliged to pass through the hands of half a dozen workmen. By the old method the work was done slowly, and careful adjustment of tools was always necessary to insure accuracy, while each man was obliged to wait for a piece until the previous workman had finished what he had to do on it. The use of jigs will now enable the work to be done rapidly and in greater quantities, insuring absolute accuracy without waste of time in making adjustments, and will enable all workmen to be fully employed in the different operations and practically on the same tool holder.

Self hardening steel is exclusively used for the cutters. A special grade of steel is used for the tool holders, which has been adopted after a long course of experiments with numerous brands, and this steel is guaranteed by the company. The stock of steel is carried in systematically arranged racks, so that each size is not only by itself but is labeled so that the workman makes no mistake in securing the stock he needs.

The space in the company's new quarters has been divided by partitions into several rooms. In front are the offices, through which each employee passes into a coat room. Here a separate compartment has been arranged for each man, so that he can change his clothing when going to work or after quitting. A toilet room adjoins it. The greater part of the space is thrown into one large room, containing most of the machinery, stocks of raw material, furnace, &c. A large power elevator enables all material to be handled in and out economically.

A room has been partitioned off in which special machines are kept which have been built by the company themselves for certain parts of the work. For instance, it is necessary to make square holes in the tool holders for insertion of the cutters. These holes are first drilled from the solid steel and then squared by the special machines.

A fine tool room has been arranged, which will be in charge of a man and a boy. This tool room is fitted with the usual racks and shelves and also contains a number of drawers in which the finer tools can be kept in proper condition. The room further contains a Brown & Sharpe cutter grinder, a twist drill grinder, a tool makers' lathe and a universal miller. The man in charge keeps the tools in proper condition while the boy gives out the tools as required and keeps the record of them. The tool holders used in the shop are carried in this room in drawers which are fitted with compartments for each part so that when they are called for they can be handed out in sets.

A room is also set off for a stock room. In this a stock of completed tool holders is carried to fill orders. This is arranged with drawers and racks for the different parts as well as shelves for the finished tool holders, which are carried in boxes ready for shipment.

The company have in late years been unable to keep up with their orders, but with their increased facilities they expect to be in position to accumulate a fair stock of tool holders so that they will be able to make shipments more promptly.

The company's main office is at 106 and 108 West Washington street, Chicago. Paul Armstrong is secretary and has charge of the sales department, H. J. Armstrong is treasurer and business manager and John Armstrong is president and superintendent of the factory. They have a large European trade which is handled through jobbing houses in London, Berlin, Paris and Moscow.

PERSONAL.

F. J. McIntosh has been appointed superintendent of the works of the Seamless Tube Company at Detroit, Mich. Mr. McIntosh served his time with Pratt & Whitney at Hartford, Conn. He was afterward with the Pope Tube Company at Garwood, N. J., and when that plant was taken over by the Shelby Company, was transferred to the Shelby plant at Greenville, Pa.

George E. McCague of the Carnegie interests of Pittsburgh, has gone to the Bermudas.

Another benefaction of Andrew Carnegie just reported is a donation of $20,000 for the erection of a library building for the Tuskegee Institute of Tuskegee, Ala., of which Booker T. Washington is the head.

J. C. O'Donnell of Pittsburgh has been appointed superintendent of the National Steel Company's furnace at Niles, Ohio.

Cyrus Elder, solicitor for the Cambria Iron Company for more than 30 years and for the Cambria Steel Company since their organization about two years ago, has resigned owing to ill health, and has been succeeded by H. S. Endsley, who has been Mr. Elder's assistant since 1892.

C. T. Schoen has resigned as president of the Pressed Steel Car Company and become chairman of the board of directors of the company. He is succeeded in the presidency by F. N. Hoffstot, former chairman of the board.

J. C. Winther of Boston, Mass., has been appointed superintendent of the Chapman Valve Mfg. Company's works at Indian Orchard, Mass., to succeed Lorin Aldrich, resigned.

Leonard Ames, Jr., for 25 years head of the Ames Iron Works, Oswego, N. Y., has retired from business.

H. B. Utley has resigned his position as general superintendent of the McCormick Harvesting Machine Company, Chicago.

J. G. McRoberts, formerly superintendent of the American Steel Foundry Company, Granite City, Ill., has taken service in the same capacity with the Shickle, Harrison & Howard Iron Company, East St. Louis, Ill.

Lieutenant Harold H. Eames, who was long connected with the Pope Mfg. Company of Hartford, and with the Electric Vehicle Company, has become a member of the administrative staff of the Westinghouse Machine Company of Pittsburgh.

J. M. Van Harlingen, lately connected with the Republic Iron & Steel Company at Chicago, and formerly identified with the Ohio Steel Company, and later with the National Steel Company, at Youngstown, Ohio, has been engaged to travel for the American Steel Hoop Company under the direction of Samuel Siddall, district sales agent at Cincinnati, Ohio.

J. B. Wikoff has been appointed general manager of the plant of the American Sheet Steel Company at Cambridge, Ohio.

B. F. Jones, Sr., and B. F. Jones, Jr., of Jones & Laughlins, Limited, Pittsburgh, have gone to Florida for an extended stay.

George C. Smith, general manager of St. Louis-Evansville lines of the Southwestern Railway System, has resigned and will go to Pittsburgh to accept the position of vice-president of the Security Investment Company, of which George Westinghouse is president.

N. S. Sellers of La Porte, Ind., has been elected treasurer and general manager of the National Machine Company of Columbus, Ohio.

David E. Park, the well-known steel manufacturer of Pittsburgh, has been elected second vice-president of the People's National Bank, in that city.

Thomas Hanley has been appointed superintendent of the Indiana plant of the Republic Iron & Steel Company, at Muncie, Ind.

William S. Accles, manager of the English branch of the Niles Tool Works Company, is in this country making a short visit.

Taking effect February 1, Frank L. Clark, general manager of all the mills of the American Steel Hoop Company, with headquarters in the Empire Building, Pittsburgh, will remove to New York City, where he will be in closer touch with the executive officials of the concern. Mr. Clark will still retain the title of general manager. Walter Jenkins, formerly of the La Belle Steel Company, a constituent interest of the Crucible Steel Company of America, has been appointed general superintendent of all the mills of the American Steel Hoop Company, with headquarters in the Empire Building, Pittsburgh. This is a new title, created by reason of Mr. Clark's going to New York.

Bessemer Coke Company.—At the annual meeting of the Bessemer Coke Company, Pittsburgh, held last week, the following directors were elected: W. Y. Humphreys, Joshua W. Rhodes, Hermon Griffin, William Harris, R. L. Martin, Dallas C. Byers and Hiram Harris. Officials were elected as follows: W. Y. Humphreys, president; Joshua W. Rhodes, vice-president; Hermon Griffin, treasurer; William Harris, secretary, and R. L. Martin, general manager.

The Schenley Estate announces that it will build a large warehouse on Penn and Third avenue, Pittsburgh. The building will be of very large dimensions and when completed will be occupied by Follansbee Brothers Company, tin plate and sheet iron, whose offices and warehouses are now located on Second avenue, Pittsburgh. The building will be about three stories high and will have two railroad switches entering it on the ground floor. Material will be thus received and shipped in carloads on their own tracks.

The Naval Board appointed to decide on the desirability of purchasing from Spain the large floating drydock in Havana Harbor have reported that to place the dock in thorough repair and prepare it for a voyage would cost over $500,000, and that a new dock could be built at a figure no greater. Rear Admiral Endicott, chief of the Bureau of Yards and Docks, has recommended that, as there is no present necessity for the acquisition by the Government of such a dock, the tender of the Spanish Government to the United States shall not be accepted. Secretary Long has approved this recommendation.

The National Rolled Steel Car Company have been incorporated under the laws of West Virginia, with a reported paid up capital of $600,000, which, it is claimed, will be increased to several millions. The concern proposes to build a plant in the Pittsburgh district for the manufacture of rolled steel railroad box cars, gondolas and car trucks under patents owned by C. N. Carnahan.

The Erie & Pittsburgh Railroad is to be double tracked between Sharon and New Castle, Pa.

Exports of Iron, Steel, Metals and Machinery in 1900.

The Bureau of Statistics has just issued the December report of imports and exports, so that it is possible now to present final figures as to the export movement of iron, steel, metals and machinery.

For all the articles classified under iron and steel, to which reference will be made in detail, the value of exports was as follows, exclusive of iron ore:

Total Exports of Iron and Steel.

1898	$82,771,550
1899	105,690,047
1900	129,633,480

Turning to those articles for which quantities are given, we have the following figures:

Exports of Iron and Steel.

	1898.	1899.	1900.
Iron ore, gross tons	31,579	40,665	51,460
Ferromanganese, gross tons	3,700	13	32
Pig iron, gross tons	249,357	228,665	286,783
Scrap, gross tons	73,845	76,633	47,283
Bar iron, net tons	17,923	12,206	14,879
Wire rods, net tons	20,731	19,031	11,930
All other bars or rods, net tons	27,782	34,080	91,130
Billets and blooms, gross tons	28,600	25,487	107,476
Hoop, band and scroll, net tons	1,785	3,213	3,389
Iron rails, gross tons	8,311	6,442	5,374
Steel rails, gross tons	293,592	271,272	356,245
Iron plates, net tons	5,002	6,940	10,451
Steel plates, net tons	30,324	56,711	51,020
Tin plate, net tons	52	149	306
Structural iron and steel, gross tons	34,038	54,244	67,714
Wire, net tons	83,626	130,275	87,376
Cut nails, net tons	17,624	11,171	12,502
Wire nails, net tons	15,359	37,539	30,693
All other nails, including tacks, net tons	2,345	2,350	2,024

Really notable increases during 1900 over previous years are shown by the exports of pig iron; by "all other bars or rods," which we take it include sheet and tin plate bars; billets, which went beyond 100,000 tons; steel rails and structural material. One surprising fact developed by the tables is that the export of steel plates was somewhat smaller in 1900 than it was in 1899. The falling off in the export of wire products, rods, wire and nails is somewhat significant.

The following table summarizes the figures for which only values are given. It includes iron products, machinery and hardware:

Exports of Iron and Steel Products.

	1898.	1899.	1900.
Car wheels	$124,069	$163,323	$172,153
Castings, not elsewhere specified	780,830	1,348,746	1,498,985
Pipes and fittings	4,595,451	6,763,396	5,994,521
Stoves and ranges	449,007	524,324	566,978
Cash registers	.....	.....	*860,622
Electrical machinery	2,523,644	3,145,838	5,286,224
Laundry machines	.....	182,832	475,952
Metal working machines	5,741,750	6,840,924	6,210,594
Printing presses	843,688	1,037,644	1,295,379
Pumps and pumping mach'ry.	2,300,811	3,016,645	2,750,312
Shoe machinery	939,671	961,736	1,028,257
Fire engines	6,588	21,848	24,625
Locomotives	5,190,782	4,767,850	4,468,527
Stationary engines	352,668	494,939	873,509
Boilers and parts of engines.	1,145,508	1,439,363	1,855,398
Safes	106,085	164,710	121,657
Scales and balances	328,940	487,113	543,553
Locks, hinges and builders' hardware	4,308,799	5,464,913	6,067,658
Saws	232,095	231,837	311,317
Tools, not elsewhere specified	2,404,327	3,246,782	3,403,427
Table cutlery	31,251	68,156	54,862
All other cutlery	641,005	892,620	1,424,630
Sewing machines	3,062,471	4,103,828	4,510,220
Typewriting machines	2,077,250	2,776,363	2,736,435
All other machinery	16,413,893	19,721,191	23,852,046
All other manufactures of iron and steel	9,933,992	12,058,880	16,509,375

*Not separately stated until July 1, 1900.

This on the whole is an exceedingly satisfactory exhibit. It is a pity that the quantities for some of the items are not reported, this being notably the case for pipes and fittings. In fact, it is not quite sure whether cast and wrought pipe are not jumbled together in this one item. The decline in 1900 as compared with 1899 is somewhat surprising. In metal working machinery

the adverse conditions began to tell in 1900, and the same is true of pumps. The increase in electrical machinery is very marked, and satisfactory progress has been made in engines, while locomotives show a moderate decline.

Among the miscellaneous exports we find the following:

Exports of Miscellaneous Articles.

	1898.	1899.	1900.
Agricultural implements	$9,073,384	$13,594,524	$15,979,909
Aluminum and manufactures	239,997	291,515	281,821
Fire brick	146,632	214,375	594,237
Cycles and parts	7,092,197	4,820,284	3,061,061
Cars	2,063,509	2,581,357	4,563,078
Clocks and watches	1,868,979	1,850,641	2,104,319
Copper, manufactures	1,190,939	1,852,499	2,257,563
Brass and manufactures	1,237,027	1,607,072	2,068,072
Copper sulphate	466,244	1,302,420	2,052,989
Belting, hose and packing	Not reported	279,069	528,382
Oxide of zinc	252,194	366,598	496,380
Plated ware	410,803	493,528	518,988
Tin, manufactures	281,794	401,217	467,332

These figures throughout show satisfactory progress.

The coal exports increased from 4,503,405 tons in 1898 to 5,752,150 tons in 1899, and to 7,917,319 tons in 1900. The coke exports were 199,562 tons in 1898, 280,196 tons in 1899 and 376,999 tons in 1900.

The exports of metals are exhibited in the following table:

Exports of Metals.

	1898.	1899.	1900.
Copper ore, tons	9,343	3,747	10,007
Copper ingots, net tons	145,978	143,413	169,061
Lead, net tons	59	47	997
Type, pounds	265,062	314,348	363,600
Nickel, oxide and matte, pounds	5,657,618	5,004,377	5,870,206
Zinc ore, tons	10,520	24,197	37,555
Spelter, net tons	10,499	6,755	22,410

Considerable development has therefore taken place in this branch also.

The Carnegie Arrangements.

PITTSBURGH, PA., January 30, 1901.—While not officially confirmed the belief is very general in iron circles here that an arrangement has been made between the Carnegie Steel Company and the American Sheet Steel Company by which the Carnegie Company will furnish a large tonnage of sheet bars to the American Sheet Steel Company for the next five years, and will not build the proposed sheet plant at Duquesne.

It is also probable that an arrangement will be consummated this week between the National Tube Company and the Carnegie Steel Company by which the latter concern will abandon the building of the proposed tube mill at Conneaut. It is understood the Carnegie Company will furnish a large tonnage of plates to the National Tube Company for a period of three or five years or longer.

The report is generally credited here that Andrew Carnegie, provided satisfactory arrangements can be made, will retire from the head of the Carnegie Steel Company and will devote his time and fortune to the furtherance of philanthropic plans. It is certain that overtures have been made to Mr. Carnegie through the J. P. Morgan interests to buy his holdings in the Carnegie Steel Company.

NEW YORK, January 30, 1901.—The highest officials in the American Sheet Steel Company deny that any arrangement has yet been made with the Carnegie Steel Company. The relations between the two concerns are pronounced amicable, and the sheet company are now receiving, as they did before the consolidation, steel ingots from the Carnegie Steel Company for one of their most important plants.

No official statement has been made by any of the officers of the National Tube Company in this city.

In the very best informed circles here it is accepted as a fact that Mr. Carnegie has been asked to name a price for his interest. The figure asked by him is stated to have been so large that it was regarded as being out of the question to negotiate on such a basis.

The Compression of Fluid Metals.

BY A. E. FAY.

Several years ago Wm. H. Wood wrote to *The Iron Age* (September 20, 1894), taking exceptions to a statement of R. H. Tweddell, "that Sir Joseph Whitworth was the first gentleman to conceive the idea of the compression of fluid metals," claiming the distinction for his father, James Wood, who in 1856 completed a screw press for compressing copper in a fluid state for making hollow rollers for calico printing, thus according to his son being the first to conceive the idea and to put it into practice. In view of this statement, which has not been denied, and of the general impression that Bessemer was the first to suggest this idea, which he did in 1856, it may be of some interest to trace the early history of this important invention.

The compression of molten lead for tea leads by the Chinese, which was described in Lardner's Cabinet Cyclopædia, published in 1834, the forcing of molten metal into molds under pressure by means of a pump in type casting machines, first suggested by Wm. Church in 1822, and Eberhardt's method of compressing molten metal in the molds by centrifugal force, patented in 1809, may all be dismissed as having no practical bearing on the subject. But in any event the credit for doing all that has been claimed for Wood, and a little more, belongs to a Lancaster mechanic named James Hollingrake, whose invention preceded Wood's by nearly 40 years. In his patent of 1818 he says: "My invention consists in casting rollers for calico printing either hollow or solid, of copper or other metal, with greater soundness and closeness of texture than the rollers hitherto made for that purpose. The copper may be melted in any suitable crucible, and a sufficient quantity for the casting of the roller poured into a proper mold, and while it is in the mold in a fluid or soft state I employ a sudden and adequate pressure upon the top of such metal sufficient to compress the whole body or column into a much shorter length than its natural gravitation and contraction in the act of cooling would produce. Any adequate weight simply pressing on the top of the fluid metal while it is in the mold or any of the well-known mechanical powers will produce sufficient pressure for my purpose." In the next year he took out a second patent for "Casting Metallic Substances," in which he described the use of a mold having movable pistons at the top and bottom, either or both of which was to be forced inwardly by "any of the well-known mechanical powers, the screw, the wedge, the lever, the rack and pinion, the hydromechanical press, or simple weights." According to *Engineering*, this process was in regular use at the Broughton Copper Works of Manchester for many years, beginning some time in the 40's.

Although Hollingrake's second patent was not limited to any metal, it was probably not intended nor used for any but copper or the softer metals, and the first suggestion for compressing molten steel seems to have been made in 1844 by Wm. L. Sargant of Birmingham, who patented an impossible device in which the metal was supposed to be compressed by a weight falling onto the surface of the metal as soon as it was poured, the steel then being left to cool under the pressure of the weight. Before Wood also came Naysmith and Barton in 1850, and Poole in 1853, who compressed copper for printing rollers, by a steam hammer and wedges respectively, and Everitt patented the same thing again in 1857.

In view of these facts it would seem that Bessemer's suggestion of compressing steel by the hydraulic press could not rank with his other great ideas in point of originality. He was, however, the first to suggest the application of pneumatic pressure directly on the surface of molten metal, an idea which has been attractive to several later inventors.

The names of Rowan (1862) and Jackson (1863) preceded Whitworth's in the idea of the hydraulic compression of molten steel, for the first patent of the latter is dated 1865. He seems also to have been preceded

in the practical application of the process on a large scale by Rerollier, Bietrix & Co., who adopted it at St. Etienne in 1867. The first American to enter this field was John Blake Tarr, at that time of Chicago, who brought out his first invention in 1866 and continued to apply for patents at short intervals for ten years. He at first used screw presses, but adopted hydraulic ones later. Most of his inventions were especially adapted for the manufacture of car wheels.

The mechanical presses of Whitworth, Daelen, Gledhill, Larroff, Webb, Hinsdale, Billings, &c., for large work in steel and copper, and that of Smith for small delicate castings in aluminum, bronze, &c., need no description at this time, and the same may be said of the pneumatic processes of Krupp, Jones, Rives, Henderson, and others, but some of the later improvements may not be so well known.

John Illingworth of Newark, N. J., has recently invented an ingot casting machine in which a series of rectanguar molds is placed in a horizontal hydraulic press. Each mold has a movable side wall, which is moved back after casting and a wedge inserted between it and the ingot. Then the press is worked to force these movable sides forward together to compress the ingots. J. A. Potter's improved method of casting ordnance consists in keeping the central end portions hot by means of a non-conducting coating on the presser head during the preliminary compression, and then further compressing this central portion alone. Two devices for compressing the softer metals have recently been invented by Charles Grasser and Edward Hett. M. Henri Harmet's system of "drawing" ingots in the mold, which is in use at St. Etienne, is the latest advance in this art.

Industrial Notes from Chester, Pa.

CHESTER, PA., January 29, 1900.—Since the death of the late Capt. William S. McManus there has been considerable speculation in business circles as to what will become of the proposed Keystone Tube Company, which Mr. McManus and some of the men from the South Chester Tube Company were organizing. The Keystone Company were incorporated under the laws of New Jersey, on September 1, 1900, with W. S. McManus, president; Joseph M. Bell, mechanical engineer; John A. Hock, manager, and Henry Hock, foreman.

It is known that under the directorship of Captain McManus there had been rapid advances made toward getting the plans of the corporation in such shape that building operations could be started, and it was rapidly nearing that state of affairs when the organizer of the company and the promoter of the plans was called away by the hand of death.

John A. Hock, superintendent of the proposed new plant, was seen this week by a correspondent of *The Iron Age* and asked what would be the status of the new company now that the president is dead. He said "there was not much to say, as there had been no meeting of the people interested in the venture and there would not be for some days. He could not see why there should be any hesitation in the work, as the money had been subscribed and much of the work has been done in the drawing department. The officers have been looking around for some time to get a river front property suitable for their purposes, and they have options on several, but there has been no purchase made."

The annual meeting of the stockholders of the South Chester Tube Company will be held at the Philadelphia office, 431 Chestnut street, on Wednesday at noon, February 6, 1901.

Robert Wetherill & Co. have decided to make an enlargement and some important changes to the machine shop at Sixth and Upland streets.

The extensive improvements which are being made at the Solid Steel Casting Works are rapidly nearing completion. Conditions have been favorable for the mechanics to continue the operations without a hitch, and in a short time the company will have the use of the increased space in their foundry. The structural iron work has already been completed, and the roof is now being put on the brick addition to the buildings.

MANUFACTURING.

Iron and Steel.

F. R. Dravo & Company, Lewis Building, Pittsburgh, are consulting engineers for the new buildings to be erected by James McKay & Company, chain manufacturers at McKee's Rocks, Pittsburgh. The buildings will be erected by the American Bridge Company, as stated in these columns some time since. The buildings will be one-story high, and one will be 270 x 40 feet, another 210 x 65 feet and the third 60 x 40 feet. In addition, there will be an engine and boiler house 90 x 38 feet.

The National Tube Company of Pittsburgh filled an order recently for 15 miles of 6-inch pipe in a very short time. The pipe was destined for Beaumont, Texas, and was first shipped to Cincinnati and then transferred to the Queen & Crescent route, and on a specially fast schedule was hurried to New Orleans. The shortest route to the new oil field in Texas is via Cincinnati and New Orleans.

The National Steel Company will make some extensive improvements at the Ohio Works, at Youngstown, Ohio. The rail mill will be extended 100 feet, and new drill or straightening presses will be added. The American Bridge Company have been given a contract for the extension to the buildings, while the Lloyd Booth Company, at Youngstown, have been given the contract for the beds and transfer tables.

Spang, Chalfant & Co., Incorporated, of Pittsburgh, operating the Etna Iron & Tube Works, at Etna, have formed the Fayette Coal Company, with a nominal capital of $1000. It is intended to develop a tract of 700 acres of coal land at Noblestown, Pa., the product to be shipped to the mills at Etna. The incorporators of the new company are Henry Chalfant, Geo. A. Chalfant, C. C. Chalfant, C. C. Henderson and C. W. Hanford.

An accident occurred last week at one of the Bellaire furnaces of the National Steel Company, at Bellaire, Ohio. One man was killed and several others seriously injured.

At the annual meeting of the stockholders of the Youngstown Iron & Steel Roofing Company, Youngstown, Ohio, held last week, the capital stock was increased from $25,000 to $300,000. It will be recalled that this concern propose to build in the Youngstown district a four-mill sheet and galvanizing plant. The additional capital will be used for the building of this mill.

As yet no site has been selected for the new plant of the Youngstown Iron Sheet & Tube Company of Youngstown, Ohio. The directors of this new concern met the other day and heard reports from the committee on the matter of a site for the new mill. Now that Geo. D. Wick, president of the company, has returned from Europe it is probable that a site for the new plant will be selected at a very early date.

The Republic Iron & Steel Company will commence the building about March 15 of two new guide mills and continuous hoop mill at the Brown Bonnell Works, Youngstown, Ohio.

The Monongahela Works of the American Tin Plate Company on the South Side, Pittsburgh, started up on Monday, January 28, after being idle some months.

No. 3 furnace of the Eliza group of Jones & Laughlins, Limited, at Pittsburgh, has been started up. This is an entirely new stack, making three that this firm have in operation at this plant. Each of these stacks will turn out from 600 to 700 tons of metal per day. Work on the building of the fourth stack is being pushed, and it is expected to be ready for blast some time in the summer. The completion of these four furnaces, together with Soho in Pittsburgh will give Jones & Laughlins, Limited, a daily output of pig iron ranging from 2700 to 3000 tons.

Lindsey Kelly, Ironton, Ohio, has purchased Centre Furnace from Mrs. Lindsey Kelly for $30,000. Preparations are now under way for putting the furnace in blast, and under Mr. Kelly's management 100 tons of charcoal iron will be produced per week. Tice Ridenour will be assistant manager.

The Sharon Steel Company and the Beechwood Improvement Company of Sharon, Pa., have made an agreement to build 400 houses at South Sharon to provide homes for the workmen employed in the new mills. It is estimated that fully 2000 more houses will be needed when the large mills at Sharon are started.

James A. Campbell, trustee for the creditors of the Continental Iron Company, at Niles, Ohio, and Wheatland, Pa., has been granted authority by the courts to sell the plant at Niles, Ohio, for $35,000 and the personal property for $90,000. A part of the Wheatland mill was started up on Monday, January 28, on single turn, three heating furnaces being started. It is probable some of the puddling furnaces will be lighted this week.

The Columbus Chain Company, Columbus, Ohio, in order to keep pace with their increasing business, have decided to enlarge their plant in the South End by 15 fires, giving employment to 25 more men. The present plant operates 45 fires. They expect to have the addition completed within the next 30 days.

The Marting Iron & Steel Company, Ironton, Ohio, have

elected the following directors: H. A. Marting, A. H. Mittendorf, W. A. Murdock, E. J. Bird, Jr., J. H. King, C. B. Fowler and T. J. Gilbert. The officers will be: President, H. A. Marting; vice-president, C. B. Fowler, and treasurer T. J. Gilbert.

The rolling mill of the Ohio Rolling Mill Company, Findlay, Ohio, manufacturers of bar iron, will be enlarged in the spring by the addition of another train of rolls. This will necessitate the installing of another engine also to furnish power.

The Spearman Iron Company, operating Spearman Furnace, at Sharpsville, Pa., have elected the following directors: J. J. Spearman, H. H. Henderson, Jos. Foraker, John Phillips and Miss Alice Pierce. J. J. Spearman is president of the company, and M. A. Hanna of Cleveland has sold his interest in the concern.

On Saturday evening, January 26, the Monongahela furnaces of the National Tube Company, McKeesport, Pa., blew in their A Furnace, it having been out since September 19, 1900. The furnace has been completely remodeled, being made 10 feet higher and a skip hoist substituted for the old straight lift. The furnace was lighted by little Louise Allderdice, daughter of General Manager Taylor Allderdice of the McKeesport branch of the National Tube Company.

The new shafting works of the Republic Iron & Steel Company, at the Mahoning Valley plant, at Youngstown, Ohio, were started up last week.

The Youngstown Steel Company, at Youngstown, Ohio, are having installed at their blast furnace a Weiss condenser which is being built by the Southwark Foundry & Machine Company, Philadelphia.

The rod, wire and wire nail mills of the American Steel & Wire Company, at New Castle, Pa., will probably be started up this week. This is a very large plant, the nail mills having a capacity of about 3000 kegs per day. The plant has been idle since last April.

At a meeting of the stockholders of the Cumberland Iron & Steel Shafting Company, at Cumberland, Md., it was decided to change the corporate name to the Cumberland Steel Company. The business will be carried on as heretofore, at the same location and with the same officers and employees; the only change will be in the name.

Machinery.

The Cooper Machine Company, engineers, founders and machinists, Saltsburg, Pa., are running their works to full capacity and have a large number of orders on hand. This concern build power plants, gas and gasoline engines, friction clutches, and also take contracts for general and special machinery castings in iron, brass and bronze.

The Lidvina Multi-Expansion Motor Company, Princeton, Ind., who recently incorporated, are putting their new motor on the market.

P. Hollingsworth Morris, Philadelphia, Pa., reports a very active condition of business. Among orders on hand may be mentioned one D'Auria high duty compound 100 horse-power pump of 1,000,000 gallons capacity, to work against 360 feet of water. This pump will shortly be shipped to Havana, Cuba. Another, of 3,500,000 gallons capacity, is building for the Hospital for the Insane at Washington, D. C., and two of smaller capacity are in course of erection for Rittenhouse & Miller, Camden, N. J., to whom 25 extractors have also been recently delivered. Inquiries with P. H. Morris have been of good volume, and the prospects for continued activity are bright.

The Diamond Drill & Machine Company, Birdsboro, Pa., manufacturers of machinery and iron castings, have closed contracts for a number of tin plate mills, squaring and doubling shears with the Sharon Tin Plate Company, Allegheny Steel & Iron Company, and the Niles Iron & Sheet Company, and are enlarging their machine shop, as they have numerous other contracts in view.

The Brown Car Wheel Works, at East Buffalo, N. Y., are being rushed with orders, and to accommodate the increase of trade another addition to their foundry is being made.

The Norwood Engineering Company, Florence, Mass., pattern makers and foundry and general machine work, are building an extension to their machine shop of about 100 feet and an addition to their foundry.

The Whitin Machine Works, Whitinsville, Mass., are putting in an 800 horse-power engine and a direct connected 500-kw. generator; they are also putting in a 300-kw. generator to be attached to their present engine. This power will be used for electric railroad, lighting, and various motors about the shop.

The Thomas Iron Works, Berkeley, Va., builders and repairers of machinery, have incorporated and succeeded to the business formerly known as Boyd's Machine Works. The company are moving into their new plant and expect to be ready for business about February 15. The following are the officers: Herbert Roberts, president; Cornelius Thomas, vice-president; R. E. Crump, secretary and treasurer; Geo. M. Turner, manager.

The Dodge Mfg. Company, Mishawaka, Ind., engineers, founders and machinists, are about to extend their machine shop and foundry. The two buildings will be practically duplicates of each other, 200 x 125 feet, of steel construction, with gravel roof and side walls of brick. Each will be provided with a 35-ton electric traveling crane, together with the necessary heating apparatus and sprinkler equipment. A new 72-inch cupola will be installed in the foundry, and the electrical equipment of the plant increased by the addition of a 150-kw. generator and engine. It is also proposed to increase the main driving power by the addition of a 28 x 48 inch Corliss engine. Bids for the construction and equipment are now being considered.

Geo. J. Humbert and Edward W. Boyd have been appointed receivers of the Baldwin Automobile Mfg. Company, Connellsville, Pa. A petition in bankruptcy has been filed against the company, and the receivers at once presented a petition asking that they be authorized to continue to operate the works, as there is a large amount of unfinished work and material on hand. Permission was given to operate it for 90 days. The assets of the company consist of unincumbered real estate valued at $40,000; real estate worth $10,000, on which there is a mortgage for $6,500; stock and material on hand, $40,000; tools and machinery, $47,000.

The Mahoning Foundry & Machine Company, Youngstown, Ohio, have selected a site for the new plant which they will build in the spring. The building will be of steel. It is the intention of the company to install two cupolas, one large and one small, in the foundry. A 25-ton electric traveling crane and a 5-ton auxiliary hoist will be placed in the machine shop, with a 47-inch planer, 24-inch planer, 86-inch engine lathe, milling machine and key-seater, with the machinery equipment in the present plant. The company are considering the question of using gas engines instead of steam in both foundry and machine shops. If gas engines are decided upon an engine of 100 horse-power will be bought. All the machinery is to be electrically driven.

The foundry department of the Union Foundry & Machine Company, South Side, Pittsburgh, was destroyed by fire last week. The firm advise us that the delay in filling contracts will be very slight, and they will rebuild the foundry on a larger scale as fast as possible.

The Lewis Foundry & Machine Company, whose plant is located on the South Side, Pittsburgh, have broken ground for a new plant at Coraopolis, on the Pittsburgh & Lake Erie Railroad, about 10 miles out of the city. Contracts for the plant and most of the machinery have been awarded.

The new firm of Ragatz & Scharttgen, Dubuque, Iowa, have built a machine shop on Washington street, which they are equipping with machinery and tools of the latest design for machine repairs.

The Mexican National Machine Works, Laredo, Texas, have installed in their plant a new steam hammer with a 4000-pound stroke.

The Trees Engine & Machine Company, Greenfield, Ind., manufacturers of gas and gasoline engines, pumps and regulators, are erecting a factory, 100 x 60 feet, which they expect to have in operation by March 1. The officers of the company are T. H. New, president; L. J. Trees, general superintendent; B. W. Cline, secretary and treasurer.

The Hartford Machine Screw Company, Hartford, Conn., have acquired from Geo. L. Mason of Warehouse Point the patent rights in a turret lock for screw machines.

The Greene Mfg. Company, 300 Oakland street, Brooklyn, N. Y., manufacturers of kindling wood machinery, have incorporated with a capital stock of $100,000. The new company organized to take over the business formerly carried on by M. C. Greene, who retires from active management.

The Des Moines Gas Engine Company, Des Moines, Iowa, who for several years have operated a factory at Jefferson, have incorporated with a paid in capital of $10,000. They have leased the building at 307-311 East First street, which they are fitting up for the building of gas engines.

The William A. Harris Steam Engine Company, Providence, R. I., manufacturers of the Harris-Corliss engines, have reorganized and the plant has been conveyed to them by the assignees. The officers of the company are Frederick A. W. Harris, president and general manager; William A. Harris, Jr., vice-president and superintendent; E. Francis Crowell, secretary and treasurer.

The Grant Tool Company, successors to the Grant Machine Tool Works, Cleveland, Ohio, are erecting a plant at Franklin, Pa., which will take up 5½ acres of land, for the purpose of building machine and railroad tools. The plant will be strictly modern in every respect. The buildings will be of brick and steel construction, special attention being given to the matter of light. The works are expected to be started by the month of May. Officers of the company are: President, Charles Miller; vice-president, J. J. Grant, and secretary, N. B. Davis, all of Franklin.

The Larzelere Machine Company of Williamsport, Pa., are unusually busy with orders for portable saw mills and automatic engines. Recent orders filled were two high speed engines for Philadelphia, Pa.; one for Baltimore, Md., and one for Elmira, N. Y. The business is growing steadily, requiring frequent additions to equipment.

Fay & Scott of Dexter, Maine, manufacturers of machine tools, have just been incorporated as a stock company by the orig-

inal firm, Fay & Scott, transferring all real estate, personal property and accounts to the new corporation, which is a close corporation, the stock being held only by N. H. Fay, W. L. Fay and Marion E. Fay. This change was made simply as a more convenient method of doing business. No change is contemplated in the line of business, buildings or management.

Struthers, Wells & Co. of Warren, Pa., are putting up a steel and brick addition to their machine shop, 68 x 200 feet, which is to be used as an erecting room. The balance of the machine shop will be remodeled and an electric crane put in to serve the tools.

Pawling & Harnischfeger, Wilwaukee, Wis., manufacturers of electric traveling cranes, shipped during the year 1900 one complete crane every 48 hours, or three every week. They have just issued a neat pamphlet which gives a list of users of their cranes and electric hoists. The list embraces the names of manufacturing establishments in all parts of the United States and in many foreign countries. The list is interesting not only on account of the prominence of the concerns mentioned but also from the fact that the kind of machines used are specified. Some of the establishments named have installed a great number of these cranes, and not a few have purchased cranes of very large capacity. The firm will shortly begin the erection of a new office building. It will adjoin their manufacturing plant and will occupy a ground space of 50 x 180 feet. It will be four stories in hight and will be exclusively used for office purposes and the drafting department.

The plant of the Lane & Bodley Company, Cincinnati, Ohio, which was recently partially destroyed, is being rapidly placed in condition for the resumption of work with the exception of the foundry department. There is some question as to whether the space occupied by that department will be used for the same purpose again or be converted into additional machine shop purposes, and an entirely new foundry built in some other part of the city. The latter plan will most likely be pursued from the fact that the old foundry was practically too small for the production of the heavier castings required by the company in their business, and the conversion of the room formerly used for foundry purposes into an additional machine shop will augment the company's facilities fully one-third. All of the departments left standing by the fire have been thoroughly overhauled and are now in first-class condition, a full force being put at work next week.

The Meadville Vise Company, Meadville, Pa., state that they are meeting with very marked success in the sale of their Barrett horizontal cylinder boring machine.

E. C. Hanpeter, Second and Cass avenue, St. Louis, who recently resigned from the management of the Tudor Works, East St. Louis, of the Republic Iron & Steel Company, has secured the factory buildings formerly used by the St. Louis Stamping Company of the National Enameling & Stamping Company. He will erect an iron foundry which will be equipped with a Whiting cupola. Crocker-Wheeler motors will be used throughout the works. A general line of iron and brass beds and springs will be made.

The B.-B. Mfg. Company, Davenport, Iowa, have just been incorporated, with a capital stock of $20,000. They will manufacture stock fountains, disk sharpeners, fruit presses, novelty specialties, farm implements and tools, as well as gas or steam engines or appliances. The officers are: President, C. I. Burt; vice-president, T. A. Murphy; secretary and treasurer, George J. Barker. The name means the Burt-Barker Company, and they will succeed to the business of the Stock Fountain Company, organized several years ago and who have been selling an automatic stock fountain, which was manufactured by the Davenport Foundry & Machine Company. Over 40,000 of these fountains were sold last year, and a splendid business in this line alone is assured the new company.

The Railway Speed Recorder Company, Kent, Ohio, manufacturers of speed recorders, caboose stoves, &c., let the contract January 29, for a large addition to their plant, in which $10,000 worth of machinery will be placed for the manufacture of rock drill machines, to be operated by compressed air. Thirty machinists will be added to the force.

W. H. Gibbes & Co., Columbia, S. C., will double the capacity of their machinery warehouse by adding a half story and extending it in depth.

The D. Clint Prescott Company, Menominee, Mich., manufacturers of sawmill machinery, have commenced on a 50 x 70 foot addition to their main shop. An addition to the foundry is about completed. The company have plans, the materialization of which will greatly increase their capacity and facilitate the handling of work. The addition to the shop will relieve its present badly crowded and cramped condition. A new brick boiler house will supplant the wooden structure, soon to be dismantled. A new engine and boiler of nearly 100 horse-power will be purchased at once and this will furnish a third more power. A new planer will be put in place this week. This will be one of the largest planers in use in the Northwest. A new traveling crane will be put in place soon, together with other machinery. These improvements will represent an expenditure of several thousand dollars. The company have so many orders on hand for both new machinery and extensive repairs that they are forced to increase their capacity.

The Sterling Emery Wheel Mfg. Company, Tiffin, Ohio, are erecting a large addition to their factory which will embrace two large kilns and a complete machine shop. Other extensive improvements are contemplated in the near future.

The Straight Line Engine Company, Syracuse, N. Y., have erected a large building and otherwise increased the capacity of their plant in South Geddes street and are vacating the property known as the Porter Mfg. Works, which they leased. Additional space was made necessary by the large amount of work done for the Solvay Process Company, and the company are now able to do all their work at one plant.

The Buffalo Foundry Company, Buffalo, N. Y., were organized December 12 under the laws of the State of New York, with $10,000 paid up capital. Mr. C. F. Dunbar, W. J. Hayes, E. C. Rippel, directors for one year. Officers are W. J. Hayes, president; F. L. Dunbar, secretary; E. G. Rippel, treasurer and general manager. The company have leased the foundry department of the Eagle Iron Works, corner of Perry and Mississippi streets, Buffalo, N. Y., and will do a general jobbing foundry business. They will make a specialty of castings requiring very strong, dense, solid and homogeneous metal, and will confine themselves strictly to high grade heavy work.

The Lamson Machine Company, Abington, Mass., have recently equipped their plant with new and improved machinery for the manufacture of their gasoline motors to be attached to single and tandem wheels. They also furnish castings and blue prints in the rough.

Hardware.

Boston & Lockport Block Company, Boston, Mass., advise us that the past two years have shown quite an increase in the block business over previous years, and they see no reason why the present one should not show correspondingly satisfactory results. They have increased their facilities for manufacturing at both their Lockport and Boston factories and their inventory shows an increase of nearly 20 per cent. over any former year. The company have found it expedient to carry larger stocks of all their products in order to meet the rush business which they are anticipating.

Robeson Cutlery Company, Rochester, N. Y., have increased their capital stock from $125,000 to $150,000.

The Ludlow-Saylor Wire Company, St. Louis, on January 23 voted an increase in their capital stock to $400,000; the former capitalization was $100,000. This company have lately erected an extensive factory on Newstead avenue and the Wabash tracks, and are now actively engaged in turning out their full line of Perfect double crimped wire cloth in brass, steel and copper. This factory is in addition to their original plant at Fourth and Elm streets, St. Louis.

The J. R. Dawson Mfg. Company, Philadelphia, Pa., manufacturers of wire goods, &c., have removed from 2119 N. Lawrence street to a large four-story factory building located at 1520 North Palethorp street, the former premises being inadequate for their business.

The Penn Shovel Company, Corry, Pa., incorporated December 20, 1900, for the manufacture of shovels, have their building about completed and hope to have machinery installed to commence operations by March 1.

Miscellaneous.

The Gillette-Herzog Mfg. Company will furnish the steel work for the office building to be erected by the Surety Investment Company, Denver, Col., on Curtis street, East Denver.

The Phillips Mine Supply Company, South Side, Pittsburgh, have bought more ground on which they will erect a large extension to their foundry, machine and car shops. The building will be of brick and iron, and will be equipped with several new machine tools, including a slitting shear to cut ¾-inch plate. Later on a new cupola will be added to the foundry. The present foundry plant is turning out about 12 tons of castings daily, and is very much cramped for room.

The Dunbar Fire Brick Company, Dunbar, Pa., have received orders for 1,000,000 brick for export to British Columbia.

The Carroll-Porter Boiler & Tank Company of Pittsburgh have broken ground for the erection of their new shops at Wellsville, Ohio. In addition to doing a general line of structural iron and steel work, the company will also build steel barges.

The Pennsylvania Vault & Safe Company of Pittsburgh have applied for a charter. The company will manufacture safes under the Hough patents. It is said that work on the plant will begin in a short time.

The Pittsburgh Stove and Range Company of Pittsburgh, will turn their foundry, known as Foundry F, formerly operated by Bissell & Co., in Allegheny, into a warehouse. The new building will be of brick and two stories high. The structure will be 110 feet wide and 120 feet long.

The Youngstown Consolidated Gas & Light Company, at Youngstown, Ohio, have given a contract to the Wm. B. Pollock Company of that city for a stack 9 feet in diameter and 180 feet high.

Details are being perfected whereby the works of the New Britain Brass Company, New Britain, Conn., will be sold to Howard H. Hart and Norman P. Cooley. It is understood that the purchasers will operate this plant as soon as the necessary alterations can be made.

The Iron and Metal Trades.

There is undeniably a disposition to halt in the Iron trade. Whether, as some authorities claim, this is due to the uneasiness created by the talk of a struggle among the giants, or whether it is due to a conviction that output is overbalancing consumption, is the crucial question. At any rate, conservative leaders in the trade insist that this is a poor time to talk of advances, as the Rail and Billet people are doing, or make them, as the Wire interest has done. It is pointed out that present prices in all finished lines are fairly remunerative and that nothing should be done to check full development of the consumption.

The fact must be taken into consideration that our tonnage for export, at least in the heavy lines, is bound to fall off considerably in the near future, even if very low prices are made. Our home markets must, therefore, take care not alone of the increased output of our furnaces and mills, but must absorb a larger percentage of it than last year. There is a limit to making home market prices carry export sacrifices.

The Foundry Iron markets generally are dull and prices are easier. A leading New York consumer has bought 10,000 tons of high grade Irons at a concession.

Nothing of any consequence has been done in Bessemer Pig, but some negotiations are pending in the Philadelphia district for Basic Pig. The threatened strike in the Valleys has been averted.

The Lake Ore interests have decided to postpone action. It is understood, however, that some of the large consumers of Non-Bessemer Ores for Foundry Iron placed their contracts some time since.

The Billet situation has changed but little. It is certain, however, that some of the large interests are having some trouble about making prompt deliveries.

The Western Steel Rail makers have booked about 175,000 tons of additional orders. In the East little has been done.

Some good tonnage is in sight for the Cast Iron Pipe trade. Conspicuous among the large contracts on which bids are asked is 19,000 tons for Philadelphia and 4500 tons for Cleveland. There is some inquiry, too, for the Netherlands.

In the general Finished Iron trade the situation is somewhat mixed. The leading structural interest reports the closing of contracts aggregating 21,000 tons for the Metropolitan district alone, and a good tonnage is coming up in other centers. Chicago notes as a growing business the building of Steel grain elevators, for which preparations are being made there. Some easiness is developing in Plates, and in Chicago brokers are naming prices lower than those of the association.

The Bar trade in some sections of the country has fallen off, and slightly lower prices are being made. The Sheet trade, however, is heavy.

Some large requirements are coming out from the car shops, and the Texas oil excitement is bringing rush orders for Pipe and Tanks.

It is understood that negotiations between American and German makers of Merchant Pipe have failed and that a lively struggle in that market is imminent.

A Comparison of Prices.

At date, one week, one month and one year previous.

Advances Over the Previous Month in Heavy Type. Declines in Italics.

	Jan. 30, 1901.	Jan. 23, 1901.	Jan. 2, 1901.	Feb. 1, 1900.
PIG IRON:				
Foundry Pig, No. 2, Standard, Philadelphia	*$15.25*	$15.50	$15.50	$22.75
Foundry Pig, No 2, Southern, Cincinnati	*13.25*	13.25	13.75	20.25
Foundry Pig, No. 2, Local, Chicago	*14.50*	14.50	15.00	23.50
Bessemer Pig, Pittsburgh	13.25	13.25	13.25	24.90
Gray Forge, Pittsburgh	*13.00*	13.15	13.25	21.25
Lake Superior Charcoal, Chicago	*18.50*	18.50	19.50	25.50
BILLETS, RAILS, ETC.:				
Steel Billets, Pittsburgh	19.75	19.75	19.75	33.00
Steel Billets, Philadelphia	21.00	21.00	21.00	36.50
Steel Billets, Chicago	20.75	20.75	20.75	nom.
Wire Rods, Pittsburg (delivered)	35.00	35.00	....	nom.
Steel Rails, Heavy, Eastern Mill	26.00	26.00	26.00	35.00
Spikes, Tidewater	1.50	1.50	1.50	2.65
Splice Bars, Tidewater	*1.30*	1.35	1.35	2.30
OLD MATERIAL:				
O. Steel Rails, Chicago	**12.00**	12.00	11.00	19.00
O. Steel Rails, Philadelphia	*15.50*	15.50	16.00	22.50
O. Iron Rails, Chicago	**18.00**	18.50	17.50	24.00
O. Iron Rails, Philadelphia	18.00	18.00	18.00	26.00
O. Car Wheels, Chicago	**16.50**	16.00	15.50	24.00
O. Car Wheels, Philadelphia	17.00	17.00	17.00	22.00
Heavy Steel Scrap, Chicago	**12.00**	12.00	11.00	17.50
FINISHED IRON AND STEEL:				
Refined Iron Bars, Philadelphia	*1.40*	1.45	1.45	2.30
Common Iron Bars, Chicago	1.45	1.45	1.45	....
Common Iron Bars, Youngstown	1.30	1.30	1.30	2.15
Steel Bars, Tidewater	*1.38*	1.40	1.40	2.40
Steel Bars, Pittsburgh	1.25	1.25	1.25	2.30
Tank Plates, Tidewater	1.55	1.55	1.55	2.35
Tank Plates, Pittsburgh	1.40	1.40	1.40	2.30
Beams, Tidewater	*1.65*	1.65	1.65	2.40
Beams, Pittsburgh	1.50	1.50	1.50	2.25
Angles, Tidewater	*1.53*	1.55	1.55	2.40
Angles, Pittsburgh	1.40	1.40	1.40	2.25
Skelp, Grooved Iron, Pittsburgh	*1.40*	1.45	1.50	1.90
Skelp, Sheared Iron, Pittsburgh	*1.50*	1.50	1.55	2.25
Sheets, No. 27, Pittsburgh	2.85	2.85	2.85	2.90
Barb Wire, Galv., f.o.b. Pittsburgh	**2.90**	2.80	2.80	3.80
Wire Nails, f.o.b. Pittsburgh	**2.30**	2.20	2.20	3.20
Cut Nails, Mill	.....	1.95	1.95	2.50
METALS:				
Copper, New York	*16.87½*	16.75	17.00	16.50
Spelter, St. Louis	*3.80*	3.87½	3.95	4.62½
Lead, New York	4.37½	4.37½	4.37½	4.70
Lead, St. Louis	*4.15*	4.17½	4.30	4.65
Tin, New York	*26.25*	27.00	26.75	27.75
Antimony, Hallett, New York	9.25	9.25	9.25	9.75
Nickel, New York	55.00	55.00	55.00	38.00
Tin Plate, Domestic Bessemer, 100 lbs., New York	4.19	4.19	4.19	4.84

Chicago. (*By Telegraph.*)

Office of *The Iron Age*, 1205 Fisher Building, Chicago, January 30, 1901.

The only unsatisfactory feature of the market is the condition of the Foundry Pig Iron trade. The demand for Finished Iron and Steel is generally good, with considerable activity prevailing in some branches. Large transactions have taken place in Steel Rails, and the condition of the Merchant Bar trade is strong. Some uneasiness is observed in Plates, caused by offerings at lower than the combination price by brokers, but it is not known for whom they may be acting. The demand for Wire products is exceptionally heavy for the season, and it is expected that the American Steel & Wire Company will shortly be compelled to start their New Castle works, to enable them to supply the demand. These works have been closed for nine months. All the other factories of the company are and have been in active operation.

Pig Iron.—The market is quiet. Some inquiry is reported, but the parties are sounding the market, thus endeavoring to secure lower figures than have thus far been named. While the foundry trade is quiet and many foundrymen are complaining of lack of new business, it is nevertheless a noteworthy fact that consumers are taking deliveries on contracts with almost no requests for postponement. This leads the furnacemen to believe that a buying movement must soon be expected, as many buyers are approaching the end of their contracts. Prices are maintained on all grades except on No. 3 Southern Foundry, which can be had from some makers at a slight concession from our quotations. Quotations are as follows:

Lake Superior Charcoal	$18.50 to $19.00
Local Coke Foundry, No. 1	15.00 to 15.50
Local Coke Foundry, No. 2	14.50 to 15.00
Local Coke Foundry, No. 3	14.00 to 14.50
Local Scotch, No. 1	15.00 to 15.50
Ohio Strong Softeners, No. 1	16.00 to 16.25
Southern Silvery, according to Silicon	15.50 to 16.00
Southern Coke, No. 1	14.85 to 15.35

Southern Coke, No. 2	14.35 to 14.85
Southern Coke, No. 3	13.85 to 14.35
Southern Coke, No. 1 Soft	14.85 to 15.35
Southern Coke, No. 2 Soft	14.35 to 14.85
Foundry Forge	13.35 to 13.85
Gray Forge and Mottled	13.35 to 13.85
Southern Charcoal Softeners, according to Silicon	15.00 to 17.00
Tennessee Silicon Pig	16.50 to 18.00
Alabama and Georgia Car Wheel	20.35 to 21.00
Malleable Bessemer	15.00 to 15.50
Standard Bessemer	15.00 to 15.50
Jackson County and Kentucky Silvery, 8 per cent. Silicon	17.50 to 18.50

Bars.—Business is increasing. The orders of the past week have been more numerous, and inquiries indicate a continuance of the demand. The requirements of car builders continue to be an important feature of current trade. An order for 2000 tons was placed during the week by one of the car companies. The situation in Soft Steel Bars is exceedingly strong, the largest manufacturers having their capacity well sold up into the spring months. Hoops have been in much better demand, with some large contracts placed. Mill shipments of Common Iron are quoted at 1.45c. to 1.50c.; Soft Steel Bars, 1.40c. to 1.45c., and Hoops, 1.85c., base, Chicago. Jobbers report an exceedingly good volume of business. The past week was the biggest in tonnage in the history of some of the local houses. Prices of small lots are maintained at 1.75c. to 1.80c. for Common Iron, 1.65c. to 1.75c. for Steel Bars, and 2.10c. to 2.35c. for Hoops.

Structural Material.—The American Bridge Company were the lowest bidders on a 500-ton bridge, to be built by the city of Chicago. The demand from the bridge trade has been rather light during the week. The building trade is also slow to develop. The contracts for buildings on which figures have lately been taken are still being held back. The demand for Shapes from car builders keeps up very well, inquiries and orders being daily received. An inquiry is now in the market for 2000 tons of Channels and Heavy Angles for car work. A promising opening for Structural Material lies in the direction of grain elevators. One of the largest elevator building contractors is stated to be making arrangements to equip a shop for the purpose of going largely into Steel elevator construction. An order has just been placed on this account comprising 1800 tons of Structural Material and 1800 tons of Plates. Mill shipments are quoted as follows: Beams, Channels and Zees, 15 inches and under, 1.65c.; 18 inches and over, 1.75c.; Angles, 3 inches and over, 1.55c.; Angles, under 3 inches, 1.55c. rates; Tees, 1.70c.; Universal Plates, 1.55c. to 1.60c. Small lots of Beams and Channels from local yards are quoted at 2.10c. to 2.25c.; Angles, 1.60c. to 1.70c. rates, and Tees, 1.75c. to 1.85c.

Plates.—Considerable tonnage has been sold during the week, but it has gone to outside mills, as the local works could not make the deliveries desired. Plates are now going to a wide range of consumers. The boiler trade is not nearly such a prominent consuming interest as formerly. It is expected that a much heavier demand will shortly be experienced, as numerous large consumers are running short of stock and have for some time been buying from hand to mouth, hoping that they would be able to do better than the combination price. They have been given some reason to expect this, as brokers have recently been naming figures below those quoted by the mills. This causes some uneasiness in the trade and developments are awaited. Mill shipments of Tank Plate, ¼-inch and heavier, in carload lots, are quoted at 1.55c. to 1.60c., Chicago; Flange, 1.65c.; Marine, 1.75c. Jobbers quote small lots from store at 1.80c. to 2c. for Tank, and 2.10c. to 2.25c. for Flange.

Sheets.—Manufacturers are having an increasing pressure for more rapid deliveries on contracts, and at the same time are steadily booking fresh orders. The demand for the finer qualities of Black Sheets is unusually heavy. It is intimated that an advance in prices may shortly be expected. Stocks of Galvanized Sheets are still quite light, and a brisk demand is enjoyed by the local jobbers. Mill shipments of No. 27 Black are quoted at 3.15c., Chicago, while Galvanized Sheets are held at 70 and 7½ off. Small lots from stock are quoted at 3.30c. to 3.40c. for No. 27 Black, 2.40c. for No. 16, 2.30c. for No. 14, 2.20c. for No. 12, 2c. for Blue Annealed No. 10, and 70 off for Galvanized.

Merchant Pipe.—The situation is unchanged. A fair demand is reported and prices are steady. The expected revision of prices has not yet been made. Manufacturers' prices, random lengths, are as follows:

	In carloads.		Less than carloads.	
	Blk.	Galvd.	Blk.	Galvd.
¼ to ½ inch and 11 to 12 inches	59.2	46.2	54.9	40.9
¾ to 10 inches	66.7	53.3	61.9	49.9

Boiler Tubes are held closely to recent prices by jobbers, notwithstanding the reported disposition of some manufacturers to share rates on mill shipments. We quote from store as follows:

	Steel.	Iron.
1 to 2¼ inches, inclusive	50	40
2½ inches	50	42½
2¾ to 5 inches	60	50

Rails and Track Supplies.—The sales of Heavy Sections of Steel Rails the past week throughout the country are stated to have aggregated 175,000 tons, of which the local mill secured 60,000 tons. Quite a number of the contracts placed were divided among several mills. One Western road bought 25,000 tons, and two others 17,000 tons each, the remaining purchases consisting of smaller quantities. An advancee of $2 per ton is strongly urged by some of the manufacturers, but others are opposed to it at present, as a number of deals are pending, which, it is believed, should be closed up first. Light Rails have been in good demand, with sales of several hundred tons for export. Prices are as before—namely, $26 for Heavy Sections and $25.50 to $28 for Light Sections, according to weight. Track Supplies are active, with good contracts being placed for Spikes and other material for spring delivery. Splice Bars are quoted at 1.30c. to 1.40c., according to quantity; Spikes at 1.60c. to 1.75c. from mill, and 1.85c. rates from store; Track Bolts, with Hexagon Nuts, 2.55c. to 2.60c., and Square Nuts, 2.40c. to 2.45c.

Billets.—Quite an inquiry has cropped up for Bessemer Billets. The local works are sold up, and this business is obliged to go elsewhere. A sale of 1000 tons of Open Hearth Billets is reported. Prices are maintained at $20.75 for Bessemer Billets and $21.75 for Open Hearth Billets in large quantities; $24 to $25 for carload lots of Open Hearth Forging Billets, 1.15c. to 1.75c. for small lots of Open Hearth Billets from store.

Merchant Steel.—The current demand is light, although some contracts are being made for Tool Steel and other high grades of Steel to cover the requirements of railroads and other large consumers for the first half of the year. The manufacturers of Merchant Steel are not uneasy at the present condition of the market, being well supplied with work for some time to come. Mill shipments, Chicago delivery, are quoted as follows: Smooth Finished Machinery Steel, 1.75c. to 1.90c.; Smooth Finished Tire, 1.75c. to 1.95c.; Open Hearth Spring Steel, 2.15c. to 2.40c.; Toe Calk, 2.40c. to 2.60c.; Sleigh Shoe, 1.70c. to 1.90c.; Cutter Shoe, 2.40c. to 2.60c.; Cold Rolled Shafting, 55 off. Ordinary grades of Crucible Tool Steel are quoted at 6c. for carloads and 7c. from store; Specials, 13c. upward.

Cast Iron Pipe.—Manufacturers report the best inquiry seen for years in January, and considerable business being closed. A great deal of work is projected involving the use of Pipe. Among the projects are a number of important gas schemes in the Chicago suburbs and at other Western points. Prices of Pipe are now so low as to be attractive to projectors of new enterprises.

Old Material.—No improvement is observed in the demand from consumers; dealers are awaiting developments in the expectation of a better demand and possibly better prices. The sales by local railroads during the past week comprised about 10,000 tons, which went mainly to dealers at fair prices. This shows their faith in the future. The following are approximate quotations per gross ton:

Old Iron Rails	$18.00 to $18.50
Old Steel Rails, mixed lengths	12.00 to 12.50
Old Steel Rails, long lengths	14.50 to 15.00
Heavy Relaying Rails	20.00 to 22.00

Old Car Wheels	16.50 to	17.00
Heavy Melting Steel Scrap	12.00 to	12.50
Mixed Steel	9.50 to	10.00
No. 1 Mill	10.50 to	11.00
No. 2 Mill	9.00 to	9.50
No. 1 Busheling	8.50 to	9.00
No. 2 Busheling	7.50 to	8.00

The following quotations are per net ton:

Iron Fish Plates	$16.00 to	$16.50
Iron Car Axles	18.50 to	19.00
Steel Car Axles	15.00 to	15.50
No. 1 Railroad Wrought	14.00 to	14.50
No. 2 Railroad Wrought	12.00 to	12.50
Shafting	15.00 to	16.00
No. 1 Dealers' Forge	11.00 to	11.50
No. 1 Country Wrought	9.00 to	10.00
Iron Axle Turnings	9.00 to	9.50
Soft Steel Axle Turnings	8.00 to	8.50
Machine Shop Turnings	7.00 to	7.50
Wrought Drillings	5.00 to	5.50
Cast Borings	3.00 to	3.50
Mixed Borings, &c	4.00 to	4.50
No. 1 Boilers, cut	9.00 to	9.50
No. 2 Boilers, cut	7.50 to	8.00
Boiler and Ship Scrap	8.00 to	8.50
Heavy Cast Scrap	11.50 to	12.00
Stove Plate and Light Cast Scrap	8.50 to	9.00
Railroad Malleable	12.00 to	12.50
Agricultural Malleable	10.50 to	11.00

Metals.—Carloads lots of Lake Superior Copper are still quoted at 17½c., and Casting Brands at 17¼c. Desilverized Pig Lead is stationary at 4.32½c., and Corroding 4.42½c. in 50-ton lots.

Coke.—Prices are firm at $4.50 to $5 for 72-hour Coke. Cars are very scarce in the Coke regions, and it is difficult to make satisfactory deliveries.

Philadelphia.

Office of *The Iron Age*, Forrest Building, PHILADELPHIA, PA., January 29, 1901.

The prominent feature in the Iron trade during the week has been its extreme dullness. Naturally prices are not as strong as they were two or three weeks ago, but they are not quotably lower, simply because there has been no demand to make it worth while to inaugurate a change of that kind. Pig Iron is weak, however, and it only needs the right kind of a bid to establish the fact, but buyers hold off, and unless for something likely to be needed at once bids are hard to draw out. In the more advanced products there is a fairly good demand, but there is less snap than there was a little while back, and in articles which are not controlled by combines or pools orders can be placed at trifling reductions. The large consumers of Iron are as busy as ever, and prospects for continued activity are of the most promising character, but the opinion appears to be that prices of Pig Iron will yield a little before there is any aggressive buying. The supply is less restricted than it has been for some time past, and while it is by no means large or burdensome there is an evident desire to pick up desirable orders for spring and summer delivery. We are between seasons, however, and the present dullness ought not to be regarded as the turning point toward a declining market. Dullness may continue for a while and prices may shade off a little, but there is no reason to regard the outlook as likely to be unfavorable in its final outcome.

Pig Iron.—The week has been one of extreme dullness as regards new sales. Some business has been done in low grade Foundry Irons at $13.75 to $14, delivered, Standard Mill Iron at $14.50, No. 2 Plain at $15 and No. 2 X at $15.50. The low priced Irons were in lots of from 2500 to 10,000 tons each, the higher grades in 100 to 1000 tons each. Sellers would be glad to duplicate some of these orders, but the demand has been pretty well satisfied, and there is only a day to day demand to cover immediate requirements. The trade appear to have made up their minds to a dull market temporarily, but consumption is so large and stocks in buyers' yards are so small that there is not much uneasiness, as renewals will be unavoidable in course of a very brief period. Negotiations are in progress for Basic Iron, but buyers and sellers are apart in their views in regard to prices, so that business is in abeyance pending some sort of a compromise. The range of prices to-day would be about as follows for city and nearby deliveries (but as we have already said, sellers are disposed to meet the market on the right kind of bids): No. 1 X Foundry, $16 to $16.50; No. 2 X Foundry, $15.50 to $16; No. 2 Plain, $14.75 to $15.25; Standard Gray Forge, $14.50 to $14.75; Ordinary Gray Forge, $13.75 to $14; Basic (Chilled), $14.50 to $14.75; Basic (Sand), $14 to $14.25.

Billets.—The market is not active, mainly because Steel is hard to get for prompt shipment. Some business has been done, however, at the full quoted rates—viz.: $21 for Bessemer and $22 for Open Hearth Steel.

Plates.—There is a satisfactory run of orders, and mills are fully employed. There is not as much urgency to make contracts as there was two or three weeks ago, but enough business comes in to make a good offset to what goes out. Some options are out waiting for contracts which still hang fire, but there is little doubt that they will go through ultimately. Prices firm as last quoted—viz.: Plates, ¼-inch and thicker, 1.55c. to 1.60c.; Universals, 1.55c. to 1.60c.; Flange, 1.65c. to 1.75c.; Charcoal Iron Plates, C. H. No. 1, 2.25c.; Best Flange, 2.75c.; Fire Box, 3.25c.

Structural Material.—There is something of a pause in this department, although there is enough work secured to last well into the summer months. New business is less urgent, however, but it has no influence upon prices, which are firm as follows for seaboard or nearby points: Angles, 3-inch and upward, 1.65c. to 1.75c.; less than 3-inch, 1.50c. to 1.60c.; Beams and Channels, 15-inch and upward, 1.65c. to 1.75c.

Bars.—There is an easier feeling in Iron Bars, although there is a very fair demand. A large output is being made, however, and a brief cessation of orders is soon reflected in easier prices. As a rule 1.50c. is asked for Refined Bars (seaboard delivery), but 1.45c. is more frequently accepted, and in some cases 1.40c. has been done. Steel Bars are firm at 1.40c. to 1.50c. and Iron Bars from 1.40c. to 1.50c.

Sheets.—There is no change in this department, prices being firm and the demand satisfactory at prices unchanged as follows for best Sheets (common Sheets two-tenths less): No. 10, 2.25c.; No. 14, 2.45c.; No. 16, 2.65c.; Nos. 18-20, 3.15c.; Nos. 21-24, 3.25c.; Nos. 26, 27, 3.30c.; No. 28, 3.45c. to 3.50c.

Old Material.—Steel Scrap is in good demand at full prices, but in other descriptions there is more or less irregularity. Sales of Boiler Steel Clippings are reported at $16.75, Crop Ends at $16.25 and Rails at $16, the market for these descriptions having a strong undertone. Bids and offers for deliveries in buyers' yards are about as follows: Choice Railroad Scrap, $18 to $19; No. 1 Yard Scrap, $13 to $14; No. 2 Light Scrap, $11.50 to $12.50; Machinery Cast, $14.50 to $15; Heavy Steel Scrap, $15 to $15.50; Old Iron Rails, $18 to $19; Old Steel Rails, $15.50 to $16; Wrought Turnings, $10 to $10.50; Cast Borings, $8 to $8.25; Old Car Wheels, $17 to $18; Iron Axles, $20 to $22; Steel Axles, $17 to $18.

Cincinnati. (*By Telegraph.*)

Office of *The Iron Age*, Fifth and Main streets, CINCINNATI, January 30, 1901.

The past week has been a quiet one in Pig Iron circles. Not any great amount of either Northern or Southern has changed hands. Commission houses with branches elsewhere report several fair sized orders, but none of these were for delivery in the territory immediately tributary to this city. There has been a fairly good trade in small lots of Foundry Iron for prompt shipment. There is nothing in the character of the current inquiry to point to any but a quiet market for some little time to come. In regard to prices there is a steadier feeling and while some furnaces are still claiming to hold to prices above the maximum yet the quotations given herewith more nearly represent the market than they did a week ago. Lower prices are not looked for. Forge Iron is still very dull and is about the only uncertain spot in the whole market. Basic is well sold up and is quite strong on the basis of $11, Birmingham. Freight rate from Birmingham is $2.75 to this point; from Hanging Rock district, $1. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1	$14.00 to	$14.25
Southern Coke, No. 2	13.25 to	13.50
Southern Coke, No. 3	12.50 to	13.00

Southern Coke, No. 4	12.25 to	12.50
Southern Coke, No. 1 Soft	14.00 to	14.25
Southern Coke, No. 2 Soft	13.25 to	13.50
Southern Coke, Gray Forge	12.00 to	12.25
Southern Coke, Mottled	12.00 to	12.25
Ohio Silvery, No. 1	17.00 to	17.50
Ohio Silvery, No. 2	16.00 to	16.50
Lake Superior Coke, No. 1	15.50 to	16.00
Lake Superior Coke, No. 2	14.50 to	15.00
Lake Superior Coke, No. 3	13.50 to	14.00
Southern Basic	13.75 to	14.25
Car Wheel and Malleable Irons.		
Standard Southern Car Wheel, chilling grades	$18.75 to	$19.75
Standard Southern Car Wheel, No. 2	17.75 to	18.75
Lake Superior Car Wheel and Malleable	19.00 to	20.00

Old Material.—There is but little change in the market and trade has been rather quiet. Dealers' buying prices per gross ton are, f.o.b. Cincinnati: No. 1 Wrought Railroad Scrap, $15; Cast Railroad and Machinery Scrap, $11; Old Iron Axles, $16.75; Iron Rails, $18; Steel Rails, rolling mill lengths, $13; short lengths, $12; Car Wheels, $15.

Cleveland.

CLEVELAND, OHIO, January 29, 1901.

Iron Ore.—Members of the Ore Association announce that it need not be expected that prices will be fixed soon as conditions are not such as to permit it. Nothing has been done even in the way of holding preliminary conferences as yet. The greatest factor is to be the importation of Canadian Ores this season and until the probable extent of this is learned south shore producers are holding back on naming their figures. There is some talk of probable season freights for lake transportation, but these are of a speculative nature. The general tendency, however, is to establish a rate of about 80c. or 85c. on the ton. Shippers insist that these rates will be shaded. Shipments from the lake docks to the furnaces have been slow this week.

Pig Iron.—A meeting of the Bessemer Association was held in Cleveland on Saturday afternoon. The announcement made at its conclusion was that nothing of a definite nature had been accomplished. While there was no concerted action on the part of the association proper upon the subject, it is understood that individuals announced their intention to start many of the furnaces in the valley about February 1. The stock piles, by recent sales, have been greatly reduced, so that no great amount of that grade of Iron could be furnished upon a rush order. The sale to the Carnegie Steel Company would more than wipe out the entire surplus and this, if no more orders came in, would necessitate that some new Iron be made. To what extent the furnaces will be blown in is not known now. No effort was made to fix prices at Saturday's meeting. The absence of new prices upon Ore makes that an impossibility at present. It is believed that the Carnegie sale will stimulate the demand, making better prices in the future possible. At a meeting of the workmen employed by the furnaces of the Mahoning and Shenango Valleys at Youngstown on Sunday a resolution was adopted protesting against a reduction of wages and deciding to combat any such tendency. The furnacemen here to-day announced that they expected no trouble from their men, the inference which is generally accepted being that a compromise has been effected. Sales of Pig Iron this week have been only moderate. The number of orders have been satisfactory, but the tonnage has been small. No change has been made in the prices obtainable, the market holding steady. Nos. 1 and 2 Foundry are still quoted at $14 and $13.50 respectively, Valley furnace. Makers of Basic announce that the capacities of their plants have been sold up until March 1. These are now holding for better prices than they have been getting, although no advance has been paid. The quotations, nominally, are Basic $13.50 and off Basic $12, with the furnacemen holding for 50c. better. No further sales of Bessemer are reported.

Finished Material.—In all lines of the trade the sales have been small this week. Orders have been coming in steadily but they have been of 50-ton lots or slightly heavier, nothing of a sensational nature appearing. The best prospects appear to be still in the structural material trade. Railroad bridge work is still booming. The Nickel Plate has not covered for its new bridges, neither have two or three of the other railroads, but they are expected to cover in the near future. The building boom for Cleveland is still in sight, but there is an undercurrent of belief that some of the present projects will develop into myths. A fair tonnage is expected to grow out of the announced intention of the Lake Shore Railroad to build a group of Steel framed shops at Collinwood, where it is the intention to start a general car repairing shop. Sales of Structural Material have been small this week, with no change in the prices, Beams and Channels being quoted 1.50c., Pittsburgh, and Angles 1.40c. There is a good business in Bar Steel, but a division among the producers as to the price. Those mills which have sold up to the limit of their capacities for some weeks ahead are asking 1.35c., while the others who are on the market are content with 1.25c., and are doing the bulk of the business. Prospective heavy orders for Rails is keeping alive an interest in that branch of the Steel trade, although the sales of this week have not been very encouraging. The price still holds at $26. Some business is stirring in Billets, the sales being small but satisfactory as to number. The price remains unchanged at $19.75, Pittsburgh. Further activity in shipbuilding circles, caused by several new orders placed with the American Ship Building Company, is noted and has caused a good demand for Plates. Immediate orders are not heavy, but those in prospect are inviting. The price remains as it has been at 1.40c., Pittsburgh. The smaller mills which refused to contract at the low prices are scooping in a good volume of business, while the larger concerns are tied up with orders formerly taken. The announcement comes from Norwalk, Ohio, that the new Steel plant spoken of several weeks ago is assured. Several thousand acres of land have been purchased for the plant, which, it is said, is to be located at the northern limit of the city and preparations are made for the improvement of the docks at Huron for the receipt of the Ore. The financiers behind the movement have not appeared as yet in the transaction.

Old Iron.—Conditions in the Scrap market have not changed in a week. The prices quoted are: No. 1 Wrought, $15 net; Cast Scrap, net, $13; Stove Plate, $10 net; Old Car Wheels, $17.50 gross; Cast Iron Borings, $5.75; Wrought Turnings, $9 net; Heavy Steel, $13.50 gross.

St. Louis. *(By Telegraph.)*

Office of *The Iron Age*, 1205 Chemical Building, ST. LOUIS, January 30, 1901.

Pig Iron.—Trading in Pig Iron has been rather limited this week. Foundrymen are not making any important purchases, being satisfied rather to limit orders to cover known wants. Transactions of this nature bring buyer and seller in more frequent touch, but the cost of handling the business is greater to both parties. There is some difference of opinion among the trade as to quotations. Both Nos. 1 and 2 Southern Irons are said to have been sold during the week under the quotations below. It is proper to say that special conditions may have surrounded the deal. Inquiries are now in fair number only, but bring a greater percentage of results than heretofore. Sales, excepting one of about 1000 tons to a car building interest, are confined to lots up to several hundred tons. The statistical position of Pig Iron is considered favorable to prices, and it is a matter of comment that any softening could occur under the circumstances. We quote, f.o.b. St. Louis:

Southern, No. 1 Foundry	$14.50 to	$14.75
Southern, No. 2 Foundry	13.75 to	14.00
Southern, No. 3 Foundry	13.25 to	13.50
No. 1 Soft	14.50 to	14.75
No. 2 Soft	13.75 to	14.00
Gray Forge	12.50 to	12.75

Bars.—The principal makers are overcrowded with business and are booking new orders for forward deliveries or earlier if the specifications can find place in the mill. Taking January alone mills say that quotations made in this month have met with an unusual number of acceptances. Inquiry is opening up and jobbers say in greater volume than for several months. Some manufac-

turers of standard goods are closing for the year's supply. Mill prices for both Iron and Steel in heavy tonnage are 1.45c. to 1.50c., half extras, East St. Louis. Jobbers' price on less than carloads is 1.75c. to 2c., full extras.

Rails and Track Supplies.—Some roads are now urging that shipments to apply on their contracts be hurried forward. The open season has been an advantageous one for Track betterments, and has, on the whole, been put to good account. Logging roads and mines have been taking a very good tonnage of Light Rails. We quote Splice Bars, 1.50c. to 2c.; Bolts, with Square Nuts, 2.20c. to 2.30c.; with Hexagon Nuts, 2.30c. to 2.40c.; Spikes, 1.70c. to 1.80c.

Pig Lead.—The market in Pig Lead is extremely quiet. Missouri brands range from 4.15c. to 4.17½c.; Desilverized, 4.32½c. The lower values now prevailing are reflected in the selling price of Lead Ore, which is now $45 per ton, a reduction of $1 from the price which has been obtained since last September.

Spelter.—Heaviness still obtains in Spelter. Last known sale was based on 3.80½c., St. Louis. From this point the range is to 3.82½c. The intention to export Zinc Ore has not yet braced up Spelter prices. It is probable that a movement to close up some Zinc mines for a month or so will be carried into effect. Top price of Ore reached $27 per ton.

Pittsburgh.

Office of *The Iron Age*, Hamilton Building, Pittsburgh, January 30, 1901.

(By Telegraph.)

Pig Iron.—There will be no labor troubles at the blast furnaces in the Mahoning and Shenango Valleys, as a compromise has been effected with the men by which they will be reduced about 5 per cent. instead of 15 per cent., as originally demanded by the blast furnace owners. The basis will be $1.80 for bottom fillers, instead of $1.90, the present rate. The Struthers Furnace Company of Struthers have already arranged with their men on this basis, and the other furnaces in the two Valleys will do the same. There has been very little Iron sold since the purchase made by the Carnegie Steel Company. The Valley furnaces will not fix a price on Bessemer Iron until the Ore price for this year is known. This will probably be $4.50 a ton, lower lake ports, against $5.50, the present price. It develops that at least part of the Iron bought by the Carnegie Steel Company will be paid for in Coke, to be furnished by the Frick Coke Company. The Valley furnaces regard the price of Bessemer Iron to-day as $13 at furnace, but, as stated above, there has been practically nothing done. There is a fair demand for Forge Iron, and it is being freely offered at $13, Pittsburgh, equal to $12.25 at furnace. Foundry Iron is quiet. We quote Bessemer Iron at $12.50 to $13 at furnace, equal to $13.25 to $13.75, Pittsburgh; Gray Forge is $13, and No. 2 Foundry, $14 to $14.25, Pittsburgh. We note a sale of 1000 tons of Gray Forge at $13, Pittsburgh.

Steel.—There is an actual scarcity of Steel for prompt shipment, and the break in the blooming mill engine of the Republic Steel plant, at Youngstown, will shut them down for two weeks or longer, and take 400 tons a day out of the market. In some cases 25c. or more above pool prices has been obtained for Billets for prompt shipment. The Billet pool is to meet this week, and it is possible that prices may be advanced $1 or $2 a ton. We quote Bessemer Billets, Pittsburgh, Wheeling and the Valleys, at $19.75, delivered. Billets smaller than 3⅜ inches are $1 extra. Carbons higher than 0.21 and up to 0.60 are $1 extra; 0.61 up to 1 are $2 extra. Basic Open Hearth Steel, $1 a ton extra over the price of Bessemer. For cutting small Billets, 50c. per ton extra.

Sheet and Tin Bars.—There is a heavy demand, and some of the Sheet mills are having trouble in getting deliveries of Bars as fast as wanted; in fact, we are advised that several of the Sheet mills have been compelled to close for two or three days at a time waiting for Bars to accumulate. We quote Sheet and Tin Bars at $20.75, delivered, Pittsburgh, Wheeling and Valley districts. For cutting Sheet and Tin Bars, 50c. per ton extra.

Muck Bar.—Market is firmer, and we quote Standard grades at $25, delivered, f.o.b. Pittsburgh. We are advised of a sale of 2000 tons at that price.

(By Mail.)

The week under review in the Iron trade has been without special feature. There is no denying the fact that tonnage in January was disappointing, but a material improvement in February is expected. In fact, on some lines, such as Plates, Bars and Tubular Goods, there is better inquiry. There have been no large sales of Pig Iron since the contracts with the Carnegie Steel Company and other Steel interests were closed up, and it is not likely there will be much Iron bought for the next two or three months, as leading consumers have pretty well covered their requirements. The statement that the Valley furnaces had fixed a price of $13, Valley, on Iron, is untrue. No price will be put on Bessemer Iron until the association have some inquiries before them. While the report that the American Sheet Steel Company have made an arrangement with the Carnegie Steel Company for Sheet Bars covering a period of three or five years, and under the terms of which the Carnegie Steel Company will not build a Sheet mill, has not been officially confirmed by either concern, yet it is generally believed by the trade that if such a deal has not been made it will be put through in a few days. It is also probable an arrangement may be made by which the proposed Tube mill at Conneaut will be abandoned. A contract by which the Carnegie Steel Company are to supply a certain tonnage of Plates annually to the National Tube Company, to be finished in their own mills, will likely be made. Shipments of all kinds of Iron and Steel in January were retarded considerably by the fact that lower freights go into effect on February 1, and deliveries have been postponed as much as possible.

Ferromanganese.—We quote 80 per cent. domestic at $62.50, delivered buyer's mill.

Structural Material.—A good deal of work is in sight, and will likely be given out in a short time. Included in this is the Frick office building, involving, as stated before, some 6000 to 7000 tons. This job will likely be placed in a few days. A large office building, to be built on Wood street, this city, will take some 3000 to 4000 tons. The outlook is that the Structural mills will have all the work they can do this year. There has been no change in prices, and we quote: Beams and Channels, up to 15-inch, 1.50c.; over 15-inch, 1.60c.; Angles, 3 to 6 inches, inclusive, 1.40c.; over 6 inches, 1.50c.; under 3 inches, 1.25c.; Zees, 1.50c.; Tees, 1.55c.; Steel Bars, 1.25c. to 1.35c., half extras, at mill; Universal and Sheared Plates, 1.40c., all f.o.b. Pittsburgh.

Plates.—Tonnage in Plates in January was disappointing, being lighter than for some months. The large consumers of Plates pretty well covered their requirements before the advances in prices were made. In the last few days there has been a better inquiry, and the prospects are that tonnage in February will be larger than in this month. The leading mills are crowded with work, and on Tank Plate for prompt delivery a local mill secured an advance of $2 a ton over the fixed price of 1.40c. The Carbon Steel Company expect to commence shipments in a short time of the Steel to be used in making cables for the East River Bridge. Association prices on Plates are as follows: Tank quality, ¼-inch and heavier, 1.40c.; 3-16-inch, 1.45c.; under 3-16-inch and above No. 10, 1.50c.; Flange or Boiler Steel, 0.1c. advance over base of Tank; Marine and Fire Box, American Boiler Manufacturers' Association specifications, 0.2c. advance over Tank; Still Bottom Steel, 0.3c. advance over Tank; Locomotive Fire Box Steel and equivalent specifications, 0.5c. advance over Tank, all f.o.b. Pittsburgh.

Bars.—There is only a fair tonnage being placed, much lighter than for some time. A leading Bar mill is soliciting orders for Steel Bars and guaranteeing prompt shipments. Reports that the price of 1.25c. at mill has been shaded are not correct. However, the mills are

making better deliveries of Bars than for some time. We quote Steel Bars at 1.25c. at mill in carload lots, and 1.30c. to 1.35c. in small lots. The leading Bar Iron mills continue to quote 1.30c., Valley, or 1.34½c., Pittsburgh, for carloads.

Sheets.—There is a continued heavy demand for both Black and Galvanized Sheets, much larger than usual at this season of the year. Some of the Sheet mills are sold up for two to three months and away behind on deliveries. We quote No. 27 Black Sheets, box annealed, one pass through cold rolls, at 2.85c. to 2.90c.; No. 28, 2.90c. to 2.95c. We quote Galvanized Sheets at 70, 10 and 5 per cent. off, f.o.b. maker's mill.

Steel Rails.—The Rail mills claim to have booked about 1,600,000 tons of Rails for this year delivery. Included in these are 45,000 tons placed by the Baltimore & Ohio. We quote at $26, at mill.

Merchant Steel.—There is a fair demand, but mostly for small lots. The mills are running on specifications on old contracts. We quote: Plow Slabs, ¼-inch and heavier, at 1.60c., base; Tire Steel, 1.35c. to 1.40c.; Toe Calk, 1.70c. to 1.75c.; Open Hearth Machinery, 2c., base; Open Hearth Spring, 2c., base; Hammered Lay Steel, 3c. to 3.25c.; Rolled Lay Steel, 2.75c. to 3c.; Cold Rolled and Cold Drawn Shafting, 55 per cent. off in carload lots; 50 per cent. in less than carload lots, delivered in base territory. Tool Steel, 7c. and upward, according to quality. On Tool Steel freight is allowed east of the Mississippi River.

Skelp.—We note a sale of 1500 tons of Sheared Iron Skelp at a price equivalent to about 1.52½c., Pittsburgh. The market is quiet. We quote Grooved Iron Skelp at 1.40c. to 1.45c.; Sheared, 1.50c. to 1.55c.; Grooved Steel Skelp is 1.30c. and Sheared, 1.35c., all f.o.b. Pittsburgh; terms four months, or 2 per cent. off for cash in 30 days.

Tubular Goods.—There is nothing of special interest to note. Demand is good considering the season of the year, and local mills are making heavy shipments of oil well supplies to the new oil field in Texas. Prices to consumers in carload lots are as follows:

Merchant Pipe.

	Black. Per cent.	Galvd. Per cent.
⅛ to ½ inch and 11 to 12 inch	61	48
⅝ to 10 inch	68½	56

Casing, Random Lengths.

	S. & S.	I. J.
2 to 3 inch	58	53½
3½ to 4 inch	63	59
4½ to 12½ inch	65	61½

Casing, Cut Lengths.

	S. & S.	I. J.
2 to 3 inch	53½	49
3½ to 4 inch	59	55
4½ to 12½ inch	61½	57½

Boiler Tubes.

	Up to 22 feet. Per cent.
Steel.	
1 inch to 1¾ inch and 2¾ inch to 5 inch, inclusive	68½
2 inch to 2½ inch, inclusive	63
6 inch and larger	62
Iron.	
1 inch to 1½ inch and 2½ inch	49½
1¾ inch to 2¼ inch	45
2¾ inch to 13 inch	57

Jobbers are quoted 5 per cent. or more lower than the above prices.

Iron and Steel Scrap.—The Scrap trade continues very dull and prices are weak, and on some lines lower. It is expected there will be a better demand for Scrap in February. The mills are holding off buying until the lower freights go into effect on February 1, and also in the belief that prices will be lower. We quote nominally as follows: No. 1 Railroad Wrought Scrap, $14.50 net ton, f.o.b. Pittsburgh; Old Iron Rails, $18.50 to $19, Pittsburgh, and $19.50, Valley, gross ton; Old Steel Rails, $14 to $14.50 gross ton; Busheling Scrap, $12 gross ton; Turnings, $7 net ton; Cast Iron Borings, $6 net ton; Old Horseshoes, $13 gross ton; Heavy Melting Stock, $13 to $13.50 gross ton.

Coke.—Fully 85 per cent. of the capacity in the Connellsville Coke region is active, and output last week was 196,374 tons, pretty nearly up to high water mark. Of the 24,977 ovens in the Connellsville region, 17,126 were active and 3871 idle. We continue to quote strictly Connellsville Furnace Coke at $1.75 and 72-hour Foundry Coke at $2.25 a ton at oven. Outside brands of Furnace Coke are being offered at $1.50 to $1.65 a ton, and Foundry at $1.85 to $2.

The offices of the Duff Patents Company, manufacturers of the Duff patent water seal gas producer and Pittsburgh combination gas furnaces, have been removed from Carnegie Building to Rooms 608-609 Empire Building, Pittsburgh, Pa.

The offices of the Pittsburgh Steel Construction Company, Geo. M. Bole, president and general manager, have been removed from the Westinghouse Building to 1009 Park Building, Pittsburgh.

The Sharon Steel Hoop Company, Sharon, Pa., advise us that work is being pushed rapidly on their mills, and they feel safe in saying they will be in operation about the middle of March. It is the intention of this concern to make a full line of Hoops, Bands and Cotton Ties.

Birmingham.

BIRMINGHAM, ALA., January 28, 1901.

The market for Iron is rather unsettled and paradoxical. The inquiry is more than fair, but the resultant business does not show any snap in it. A fair amount of Iron was taken, but no large orders were placed. With Bessemer Pig at $13.25, delivered, Pittsburgh points, an element has entered the market inimical to firm prices. Freight rates would have to be cut just one-half to put this district on a parity. As it is, we must conduct a campaign of the offensive-defensive kind as long as present conditions exist. The selling agents yet assert that there is a large trade just ahead of us. But that assertion is an old story and, so far, is "a figment of the imagination." The business accepted the past week was secured to a considerable extent by concessions. No. 2 Foundry is not in plentiful supply with any seller, while with some it is in very slim supply. Even that grade cannot be called strong, for, although it is quoted at $11 to $11.25, some sold at $10.75, which is admitted, and breeds the suspicion that some went at $10.50. No. 3 Foundry is quoted at $10, which is a drop of 25c. per ton. Buyers are wanting it at not over $9.75. No. 4 Foundry is quoted, with sales of 5000 tons, at $9.75. This was exceptional, as there were sales as low as $9.25. Gray Forge looks low enough at $9, but in one case the seller can say, "I am weaker than a woman's tear," for he accepted $8.85 for at least one order. The verdict concerning the market, tersely stated, is unsettled and irregular. But it has prospects that sellers think will soon materialize.

At the Steel mill orders have so accumulated that new business is discouraged. There is nothing special to say, except that for some time changes have been inaugurated in parts of the mill to increase results, and they are not yet concluded. From the time the mill was determined upon until the present time Col. A. M. Shook has been in charge of it. At a meeting of the directors, held a few days ago in New York, the office of second vice-president, held by him, was abolished. This severs his official connection with the Tennessee Coal, Iron & Railroad Company. No name has yet been mentioned here as his successor as manager of the Steel mill. He has been prominent for long years in the industrial development of the district, and has large interests which will secure to the district his interest in its progress and his aid in the further development of its resources.

The Alabama Consolidated Coal & Iron Company have also made a change in management by abolishing the office of general manager. The position ws held by Col. F. M. Jackson, who is well known in Coal circles. The duties of his office have been delegated to Col. T. G. Bush, the president of the company. In his hands now is practically the entire management of the company. Colonel Jackson is materially interested in Coal properties in this district, and his practical experience will stand him in good stead in their development. To this end he will concentrate his efforts.

Gossip is busy concerning other changes to be made, but nothing definite is yet known here concerning them.

"The Little Cahaba Coal Company" have filed ar-

ticles of incorporation and have been granted a charter. The indefatigable De Bardeleben is at the head of them. The capital stock is $50,000, to be increased as may be desirable. Through the property runs what is known as the Underwood seam of Coal. Spur tracks to the mine to be opened will be built by both the L. & N. and the Southern railroads. A combination will probably be made with another interest in that locality and an output of 2500 tons per day be secured. The combination will control 3000 acres of Coal lands and all of it near Blocton. The Galloway Coal Company, with their mines in Walker County and headquarters in Memphis, will, for obvious reasons, remove latter to this point. They propose to increase output and be on the ground and in close touch with the Coal world. Other owners of Coal lands are entering, with a view into initial development and increased capacity. The Rogers-Brown Coal interests are being rapidly pushed to increased production and a paying basis. In fact, one can say that in this industry activity prevails throughout the district. The demand for Coal continues fine, and in the history of the district the compensation to the miners and Coal operators has never been so satisfactory as now. The owner of Coal property is a Coal baron and his indorsement makes bankable paper gilt edged.

The Hardie-Tynes Company suffered a severe loss the past week by fire. The entire plant was burned, save a small office building, and the machinery was more or less damaged. The extent of injury cannot yet be stated. It was most unfortunate for them, as they were full of contracts that insured steady work for several months to come. Their insurance was materially less than the real loss.

The annual report of the Tennessee Coal, Iron & Railroad Company shows profits for 1900 in excess of $733,007 over those of 1899. The figures as given are: For 1900, $2,536,161, as against $1,803,154 for 1899. The fixed charges for 1900 were $721,913, which gives a surplus of $1,814,248, as against a surplus of $1,210,911. The first five months' business in 1900 showed a profit of $1,606,062, while from June to December, 1900, it showed a profit of only $930,099, as against $1,409,751 for the corresponding time in 1899. The net earnings for 1900, in amount, about equal 8 per cent. on the $23,000,000 stock out. These figures are but excerpts from the report and are given to show that in the Iron world are ups and downs, snags and sandbars, eddies and maelstroms that lessen and deflect and sometimes swallow up the profit with "one time and one motion," that look so well on paper.

It often happens that experience teaches the neophyte that the surest and only way to get any money out of a furnace property is to sell it to another fellow and let him run it. It will not do to carry as "a side line."

The N. D. Pratt Sales Agencies.—In 1879 N. D. Pratt established at 91 Lake street, Chicago, the Western office of the Cleveland Rolling Mill Company and the Union Steel Screw Company of Cleveland, Ohio, and represented these companies until the sale of the first named to the American Steel & Wire Company two years since. After the transfer Mr. Pratt remained at the same location, immediately added other interests, and now represents the Union Steel Screw Company, the Grand Crossing Tack Company, the Spencer Wire Company, the Morgan Spring Company, Bliss & Laughlin, the Elliott-Blair Steel Company and the Dillon-Griswold Wire Company as selling agent for Screws, Wire Rods, Wire in every shape and variety, Steel Shafting, Cold Rolled Steel, &c. J. B. Marshall has been associated with Mr. Pratt as salesman since 1881, and is thoroughly versed in all details connected with the trade in Wire and kindred products. Wm. E. Pratt, son of N. D. Pratt, a successful manufacturer of Wire and other specialties, also having manufacturing interests in Mexico, has for many years made 91 Lake street his headquarters. Mr. Pratt, Sr., has been connected with the Wire industry so long that he ranks among the veterans in the trade. His operations extend into nearly every State, and his office is one of the busiest in Chicago.

New York.

Office of *The Iron Age*, 232-238 William street,
New York, January 30, 1901.

Pig Iron.—A leading consuming interest in this district which melts about 25,000 tons per annum has purchased about 10,000 tons of the higher grades of Virginia and Northern Irons, while a stove foundry has taken 1500 tons. The competition for the orders has been sharp and generally speaking the market is weaker, the advices from the Birmingham district also showing lower figures. We quote: Lehigh, Schuylkill and Virginia Irons, No. 1, $16.50 to $17.50; No. 2 X, $15 to $16; No. 2 Plain, $14 to $14.50; Gray Forge, $14 to $14.50; Tennessee and Alabama brands, No. 1 Foundry, $15 to $15.25; No. 2 Foundry, $14.25 to $14.50; No. 1 Soft, $15 to $15.25; No. 2 Soft, $14.25 to $14.50; No. 3 Foundry, $13.50 to $14; No. 4 Foundry, $13 to $13.25; Gray Forge, $12.75 to $13.

Cast Iron Pipe.—The run of small orders continues good and so far as volume of work is concerned the outlook is very promising. Prices, however, are still low, competition between the consolidation and the outside shops being keen. Some good orders are coming up. Among them is 19,000 tons for Philadelphia for February 7, 4500 tons for Cleveland, a round lot for Ottumwa, and 1000 tons for a town in New Brunswick. There is an inquiry, too, for 8000 to 10,000 tons for the Netherlands. We continue to quote $24 per gross ton for 8-inch at tidewater.

Steel Rails.—No large orders have been placed for Standard Steel Rails. Considerably lower prices have been made on Light Rails, which are being offered at $23 per ton. Relayers, too, are easier and $18 is being shaded. Some low prices have also been made in Fastenings, Angle Bars having been offered at 1.20c. at mill. We quote $26 for Standard Sections, and $32 to $32.50 for Girder Rails. We quote Spikes, 1.50c. to 1.60c.; Splice Bars, 1.25c. to 1.30c.; Square Track Bolts, 2.05c. to 2.10c., and Hexagon Bolts, 2.15c. to 2.20c., at mill.

Finished Iron and Steel.—A heavy tonnage in Structural Material has been placed, the American Bridge Company booking in this district 21,000 tons, some of which, however, was on contracts which had been pending for a considerable time. Among the orders placed were 3000 tons for a power house, 3000 tons for the Mt. Sinai Hospital, exclusive of cast columns; 3600 tons for a dock shed, and 3000 tons for a bridge in New England. In the Bar market an easier feeling prevails. One of the large producers states that while the November tonnage was quite heavy, the December specifications were light. In January thus far there has been a very satisfactory increase. We quote as follows at tidewater: Beams, Channels and Zees, 1.65c. to 1.70c.; Angles, 1.30c. to 1.40c.; Tees, 1.65c. to 1.75c.; Bulb Angles and Deck Beams, 1.90c. to 2c.; Universal Plate Mills, 1.58c. to 1.60c.; Sheared Steel Plates are 1.58c. to 1.60c. for Tank, 1.68c. to 1.70c. for Flange, 1.78c. to 1.90c. for Fire Box. Charcoal Iron Plates are held at 2.25c. for C. H. No. 1, 2.75c. for Flange and 3.25c. for Fire Box. Refined Bars are 1.40c. to 1.45c.; Common Bars, 1.30c. to 1.35c.; Soft Steel Bars, 1.35c. to 1.40c., and Hoops, 1.90c. to 2c., base, on dock.

The Youngstown Steel Plant.—(*By Telegraph.*)—PITTSBURGH, PA., January 30, 1901.—The steel plant of the Republic Iron & Steel Company at the Brown-Bonnell Works, Youngstown, will be idle for two weeks or longer, owing to breaking of a shaft in the blooming mill engine. This will take about 400 tons of steel a day out of the market.

A Plate Mill Record.—One day last week the 128-inch mill at the Homestead Steel Works of the Carnegie Steel Company turned out 780 tons of finished ship plates; the day turn rolled 350 tons and the night turn 430 tons. This beats all records for plate mill rolling.

The imports into the United Kingdom during the year 1900 increased $185,269,920, and there was an increase of $125,403,650 in the exports during the same period.

Metal Market.

Office of *The Iron Age*, 232-238 William street, New York, January 30, 1901.

Pig Tin.—During the week under review the market was very dull, with declining prices. During the last two days the decline was especially sharp. To-day the market closed weak at 26¼c., with sellers naming that figure for spot to February. May was offered at 25¾c. The market is weak. Arrivals here during the month have been large. Up to the present writing they have amounted to 2532 tons, and 500 tons are due. Stocks here will increase, and the total statistics will show a heavy increase, as about 2500 tons of Banca will be sold to-morrow. After showing signs of strength during the early portion of the week under review, the London market commenced to decline on Monday and the downward movement has been uninterrupted since. To-day's closing prices were £121 7s. 6d. for spot and £116 7s. 6d. for futures, with the market named as weak. From the above figures it will be noted that there is a discount of £5 on futures. This in itself does not show a very healthy position for the article.

Copper.—On the surface the market looks quiet and official prices are kept at 17c. for Lake and 16⅝c. for Electrolytic and Casting Stock. These are the nominal quotations, as the large producers are adhering to them. It is an open secret, though, that they can be shaded considerably. The actual market figure for Lake is 16⅞c., as the small lots which constitute the business nowadays are being sold at that figure. It is reported that some one has also cut the price of Electrolytic in a quiet way. The report has it that this interest sold about 10,000,000 pounds of Electrolytic within the last week at a price lower than that quoted. The sale was for three months' delivery. It was made to a combination of the Brass interests in the Naugatuck Valley who, it is said, have been buying Electrolytic very sparingly of late. The London market was dull and easy, closing to-day £71 5s. for spot and £71 17s. 6d. for three months' futures. Best Selected is quoted at £78 5s.

Pig Lead.—This market is very dull, and the American Smelting & Refining Company continue to quote 4.37½c. for lots of 50 tons and more, f.o.b. New York. The St. Louis price is 4.32½c. In England the market has continued to decline rapidly. Since last week the drop in price has amounted to 12 shillings 6 pence. To-day's closing price was £15 7s. 6d. This weakness is attributed to the heavy shipments on this side and the poor business abroad.

Spelter—Has declined sharply and is still weak and on the decline. Spot is quoted at 4c. to 4.05c., with sales reported at the former figure. Shipments from the West for February and March have sold at 4c. and are still offered at that figure. St. Louis is down to 3.82½c. and London has also declined considerably, to-day's closing quotation being £18 2s. 6d.

Antimony.—There is no change. Hallett's is quoted 9¼c. and Cookson's 10¼c. Other brands are quoted 8¾c. to 9c.

Nickel.—Producers are just about a month behind in shipments and there is no sign of relief from the pressure under which this metal has labored for some time. Contracts for the ensuing year are being made at present prices. Ton lots are selling at 55c. to 60c.

Quicksilver—Has not been changed, prices quoted here remaining at $51 per flask of 76½ lbs. in lots of 50 flasks and more. The London market is unchanged at £9 2s. 6d.

Tin Plate.—No change in the situation is reported here. The American Tin Plate Company continue to quote on a basis of $4.19 per box of standard 100-lb. Cokes, f.o.b. New York, and $4, f.o.b. mill. These prices have been named to hold until June 1 of this year. A heavy decline in England is reported. Prices have dropped from 12 shillings 7½ pence, which was the price last week, to 11 shillings 10½ pence to-day.

B. S. Constant, a manufacturer of mill machinery at Bloomington, Ill., died January 21, aged 50 years.

OBITUARY.

CHARLES JARECKI.

Charles Jarecki, president of the Jarecki Mfg. Company of Pittsburgh and Erie, Pa., died suddenly at his home in Erie on Saturday afternoon, January 26. Deceased had been ill for three weeks, but seemed much better the latter part of last week. Friday, however, he became worse and died from heart failure. Mr. Jarecki was 60 years old. The Jarecki Mfg. Company have been established over 30 years and were founded by Henry Jarecki, a brother of the deceased, who died four years ago. Since then Mr. Jarecki had been in entire charge of the firm's business.

WILLIAM T. PORTER.

William T. Porter, president of the J. Morton Poole Company, manufacturers of machinery, at Wilmington, Del., died on January 21, at his home in that city, from heart disease, at the age of 72 years. Mr. Porter was a native of Beaufort, S. C. He went to Wilmington when 15 years of age and obtained a job in the machine shop of J. Morton Poole. He gradually became familiar with every branch of the business and rose step by step, until on the death of Mr. Poole several years ago he was made president of the concern. When still a youth he had an arm cut off by a rapidly revolving machine. For many years Mr. Porter was president of the Water Commission of Wilmington, and he always took an active interest in city affairs. He was a close student of scientific subjects and kept himself well posted on modern developments in many fields of knowledge. Mr. Porter was the president of the Farmers' Mutual Insurance Company, a director of the Philadelphia, Wilmington & Baltimore Railroad Company and of the National Bank of Wilmington and Brandywine.

NOTES.

Henry H. Gabel, the oldest resident of Pottstown, Pa., died from an attack of the grip on January 21, at the great age of 96 years. He was born in Colebrookdale, Berks County, Pa., and had lived in Pottstown since 1856. He was the head of the firm of Gabel, Jones & Gabel, who in 1878 began developing the iron ore mines at Boyertown, Pa., and also operated the Bechtelsville Blast Furnace. Mr. Gabel was identified with a number of other local interests. Eleven years ago he retired from active business.

Peter Laubenheimer, who for many years conducted a large machine shop in Milwaukee, Wis., died January 17, in that city. He was born in Germany in 1817 and came to this country when a young man, settling in Milwaukee over 50 years ago.

Col. John Estill Wynkoop, who was identified with the iron and coal trades of Schuylkill County, Pa., died in Philadelphia on January 17, aged 76 years. He was born at Newtown, Bucks County, Pa., and served through the Civil War, becoming colonel of the Twentieth Pennsylvania Cavalry.

George Broomhead, an old established manufacturer of steel wire at Paterson, N. J., died on January 19 from Bright's disease. He was born in England and came to this country, settling in Paterson in 1856, since which time he had been actively engaged in the steel wire industry.

John Findlay Davitt, secretary and treasurer of the Potomac Steel Company of Cumberland, Md., and for 35 years paymaster of the W. Dewees Wood Company, at McKeesport, Pa., died on January 26 at his home in McKeesport, aged 56 years. He was born and reared in Pittsburgh and entered the employ of the W. Dewees Wood Company 36 years ago. A few years ago Mr. Davitt, with other capitalists, organized the Potomac Steel Company, whose works are at Cumberland, Md. He was also prominently identified with a number of enterprises in McKeesport.

William H. Barlow of Barlow & Co., hardware merchants, Sing Sing, N. Y., died suddenly of apoplexy on the 12th inst. Mr. Barlow was born in Danbury, Conn., in 1827 and moved to Sing Sing in 1832, his father opening a hardware store there in 1844. Mr. Barlow acted

QUOTATIONS OF IRON STOCKS DURING THE WEEK ENDING JANUARY 30, 1901.

Cap'l Issued.		Thursday.	Friday.	Saturday.	Monday.	Tuesday.	Wednesday.	Sales.
$29,000,000	Am. Car & Foundry, Common	20½ 21	21 -21	21½-21¾	21½-22¼	21 -21½	-21½	5,700
29,000,000	Am. Car & F'ndry, Pref. (7 % Non-Cu.)	67 -68⅛	67 -69	69½-70	69½-70¼	69⅛-69½	-69¾	5,760
19,000,000	Am. Steel Hoop, Common	26¼-27⅝	25⅝-26¼	26½-27	26¼-27	26⅛-27	26 -27⅛	6,700
14,000,000	Am. Steel Hoop, Pref. (7 % Cu.)	.....	-72½	-73½	72½-73½	.....	.....	400
50,000,000	Am. S. & W., Common	39⅛-42	39¼-41	40⅜-41⅝	38¾-42	39 -41¾	39½-42⅞	202,400
40,000,000	Am. S. & W., Pref. (7 % Cu.)	-85	85 -86½	-86½	85 -86½	84⅜-85	84 -86½	8,500
28,000,000	Am. Tin Plate, Common, N. Y.	59 -60¼	56¾-57⅜	57 -57⅞	56⅞-57¾	56½-57	56 -56½	9,800
18,325,000	Am. Tin Plate, Pref., N. Y. (7 % Cu.)	87¾-88	-88½	.....	-88	.....	.....	400
7,500,000	Bethlehem Iron†	.....	.....	-60	-60	-60½	-61	444
15,000,000	Bethlehem Steel, par $50, $1 paid in	-17½	.....	.....	.....	-18	.....	345
7,974,550	Cambria Iron, Philadelphia*	45½-45¾	45¾-46	.....	.....	-46	.....	223
16,000,000	Cambria Steel**	17⅜-17⅝	17¼-17⅜	17½-17¾	17¼-17½	17⅛-17¼	17 -17¼	2,754
11,000,000	Colorado Fuel & Iron	44½-46½	44⅛-45½	45½-46¼	43½-45¾	44⅝-45¼	44½-46	12,050
46,484,300	Federal Steel, Common	47¼-49⅞	46¼-47	48¼-49½	41⅜-44¾	41 -43½	42 -44¼	145,100
53,253,500	Federal Steel, Pref. (6 % Non-Cu.)	69¼-70⅜	69¼-70	70⅛-70½	70¼-71	70 -70¼	70 -70¼	5,639
32,000,000	National Steel, Common, N. Y.	39 -40⅛	39 -39½	40 -40¼	39 -40½	39⅜-40	39 -40½	7,100
27,000,000	National Steel, Pref., N. Y. (7 % Cu.)	-91	.....	.....	90¼-91	.....	.....	1,200
40,000,000	National Tube, Common, N. Y.	58 -58½	58¼-59¾	59¾-60¾	60 -62	58½-59¾	58 -59⅜	23,070
40,000,000	National Tube, Pref., N. Y. (7 % Cu.)	97 -98	97¾-98¼	99 -99¾	-99½	99¼-99½	99 -99½	2,700
5,000,000	Penna., Common, Philadelphia	.....	.....	.....	.....	-67½	-65	10
1,500,000	Penna., Pref., Philadelphia	.....	.....	.....	.....	.....	-85	10
12,500,000	Pressed Steel, Common	37½-39	36 -37	37 -37⅞	36 -37⅜	37½-38	37½-38½	11,300
12,500,000	Pressed Steel, Pref. (7 % Non-Cu.)	78 -79¼	78 -78¼	-78	77 -78	79 -79½	79 -80	2,200
27,191,000	Republic Iron & Steel, Common	13⅜-14	13⅜-13½	13¼-13⅞	13¼-14	13⅜-13⅝	-13½	2,400
20,306,900	Repub. Iron & Steel, Pref. (7 % Cu.)	57½-58	.....	.....	-58¼	.....	58½-58¾	1,100
7,500,000	Sloss-Sheffield S. & I., Common	.....	.....	.....	.....	.....	.....	....
6,700,000	Sloss-Sheffield S. & I., Pref. (7 % Non-Cu.)	.....	.....	-67	-67	.....	-67½	300
20,000,000	Tennessee Coal & Iron	56¼-58¾	56½-58	57 -57¾	56½-57⅝	57 -57¾	57⅛-58⅝	13,500
1,500,000	Warwick Iron & Steel (par $10)	.....	.....	- 7¾	.....	- 7¾	.....	3,335
15,000,000	International Pump, Common	.....	-26	-25	.....	-25	.....	600
12,500,000	International Pump, Preferred	-74	74 -75½	.....	75¾	-75	-75	775
11,000,000	International Silver	.....	.....	.....	.....	.....	- 7⅝	100

* Par $50. ** $10.50 per share paid in. † 6% guaranteed by Beth. Steel Co. Late Philadelphia sales by telegraph. ‡ Ex-dividend.

Bonded indebtedness: Am. S. & W., $130,656; Am. Tin Plate, none; Am. Steel Hoop, none; Cambria Iron Co., $2,000,000 6 % debenture 20-year bonds, 1917, payable option 5 years, assumed by Cambria Steel Co.; Federal Steel Co., $9,822,000 Illinois 5 %, $7,417,000 E. J. E. R. R. 5 %, $1,600,000 Johnson 6 %, $6,732,000 D. & I. R. R. R. 5 %, $1,000,000 2d D. & I. R. R. R. 6 %, $10,000 land grant D. & I. R. R. R. 5 %; National Steel, $2,561,000 6 %; National Tube, none; Tennessee C., I. & R. R. Co., $8,367,000 6 %, $1,114,000 7 %, $1,000,000 7 % cu. pref.; Pennsylvania Steel, $1,000,000 5 %, Steelton, 1st, 1917. $2,000,000 5 %; Sparrow's Point, 1st, 1922, $4,000,000, consolidated, both plants; Bethlehem Iron, $1,351,000 5 % maturing 1907. Interest and principal guaranteed by Bethlehem Steel Co. Republic Iron & Steel, none; Warwick Iron & Steel, none; Colorado Fuel & Iron Co.; Col. Fuel Co. Gen. Mort. 6 % $880,000, Col. Coal & Iron Con. Mort. 6 % $2,810,000, Col. Fuel & Iron Gen. Mort. 5 % $2,303,000. Also outstanding $2,000,000 preferred stock on which dividends have been paid to June 30, 1900. Sloss-Sheffield St. & I. Co., Sloss I. & S. first mortgage 6 %, $2,000,000, Sloss I. & S. general mortgage 4½ % $1,885,000.

as clerk for his father until 1849, when he was given an interest in the business, and the style became J. Barlow & Son, which continued until 1880, when it became Barlow & Co. Mr. Barlow was actively engaged in the business up to the time of his death, so that his connection with the sale of hardware covered a period of 57 years. In 1887 a branch at Croton-on-the-Hudson was established. The business of Barlow & Co. will be continued under the old name by his sons, Geo. H., William E. and J. Curry Barlow.

Iron and Industrial Stocks.

The common stock of the American Steel & Wire Company has furnished the principal element of excitement during the week and has fluctuated rapidly, although not over a very wide range. Action on the dividends has been postponed to March.

Federal Steel common has continued to decline under the threat of a large bond issue, while National Tube has gained somewhat with the increasing confidence that the danger of competition has been overrated.

	Bid.	Asked.
American Bicycle Company, common	6	6½
American Bicycle Company, preferred	25	26
American Bicycle Company, bonds	71	72
American Bridge, Company, common	42	42¾
American Bridge Company, preferred	91¼	91¾
American Sheet Steel, common	21	23
American Sheet Steel, preferred	73	75
E. W. Bliss, common	..	137½
E. W. Bliss, preferred	125	..
Cramp's Shipyard stock	81	83
Crucible Steel Company, common	23	24
Crucible Steel Company, preferred	78	80
Diamond State Steel	3⅛	3¼
Dominion I. & S. Company	22¾	23
Empire I. & S., common	6	10
Empire I. & S., preferred	39	45
National Enam. & St. common	18	22
National Enam. & St., preferred	80	82
New Haven	5¼	5½
Otis Elevator, common	28¼	29
Otis Elevator, preferred	91	91¾
Pratt & Whitney, common	3½	5
Pratt & Whitney, preferred	45	55
Tidewater Steel	7	7⅛
U. S. Cast Iron Pipe Company, common	4½	5
U. S. Cast Iron Pipe Company, preferred	31	33
U. S. Projectile	110	..
Va. C. I. & C. stock	3½	4½
Va. C. I. & C., bonds	31	35
H. R. Worthington, preferred	112	115

The directors of the Westinghouse Electric & Mfg. Company of Pittsburgh have declared the regular quarterly dividend of 1½ per cent., payable February 15.

There was a report on the Pittsburgh Stock Exchange on Monday that the Union Switch & Signal Company of Pittsburgh would make an issue of $500,000 new stock, and wipe out the bonds and supply working capital.

The Standard Chain Company have paid to the trustees of their mortgage $17,500, which is the amount required for their sinking fund, to be used in the purchase and redemption of their bonds. Coupons due February 15, 1901, are payable at the United States Mortgage & Trust Company, 59 Cedar street, New York, or the First National Bank, Pittsburgh, Pa.

Dividends.—The Andover Iron Company have declared a dividend of 5 per cent., payable March 1 to stock of record February 15.

The quarterly dividend of 1¾ per cent. on the preferred stock of the Pressed Steel Car Company is payable February 25. Books close February 4 and reopen February 25. The common dividend of 1 per cent. is payable February 28. Books close February 7 and reopen February 28.

The February coupons of the Tennessee Coal, Iron & Railroad Company purchase money bonds of the De Bardeleben Coal & Iron Company and the South Pittsburgh Company, will be paid at the Hanover National Bank.

The Kanneberg Roofing & Ceiling Company of Canton, Ohio, manufacturers of patent steel ceiling and other sheet metal products, have opened an office at 171 West Twenty-sixth street, New York, for the purpose of taking care of the growing demand for their goods in the East.

A scarcity of skilled mechanical draftsmen is reported by the bridge and structural companies in the Pittsburgh district. Structural works of all kinds are crowded with business, and it is very difficult to get a full complement of draftsmen.

The New York Machinery Market.

Office of *The Iron Age*, 232-238 William street, New York, January 30, 1901.

An unchanged situation presents itself at the close of the week under review. Large transactions are still being held off but the aggregate of small business is reported as satisfactory. There is nothing of a rush, however, and the market seems to be growing a little softer. There is more talk of slight cutting and concessions among the machine tool trade while a few weeks ago the talk was in the direction of tightening up matters whenever the opportunity was presented. In other lines, such as small and special pumping machinery, small engines and general contractors' machinery, prices are said to be unnecessarily low. There is a nervousness which prompts some manufacturers to go in for business with a big knife in hand, and the result of the bidding offers a wide contrast to the various bidders, much to the chagrin of the more conservative set who are willing to hold matters in check rather than to add impetus to a slide in the wrong direction. The slashing element are always hard to deal with and their presence at this time is particularly unwelcome, as up to date the situation has been kept pretty well in hand.

On certain large machine tools it is said that deliveries are again being stretched out considerably. The European situation has not changed to any great extent. From England the demand is rather on the increase, while Germany and Continental countries are not showing any improvement, but are constantly withholding more business.

All of the bids for the British Westinghouse equipment are now in and the engineers in charge are very busy sifting them.

Charles Churchill, president of the firm of Charles Churchill & Co., Limited, of London, Manchester and Birmingham, has just concluded another visit to American manufacturers. Although short his trip has been a busy one, and it has been a fortunate one for the American manufacturers, as he left numerous nice orders here before he returned. One of the largest single orders was placed with the Cleveland Machine Screw Company. It was for about $25,000 worth of automatic screw machines for installation in an English arsenal. Another large contract went to the American Gas Furnace Company of this city. The order called for about 50 furnaces for annealing, hardening and tempering steel projectiles. They are to be installed in the English arsenal at Woolwich. An equipment aggregating $50,000 in value was divided among several prominent builders. The machinery is for the Newcastle-on-Tyne works of the Great British gunmaking and shipbuilding firm of Armstrong, Whitworth & Co. The principal tools were purchased from the Cincinnati Milling Machine Company, the Cleveland Machine Screw Company, the Brown & Sharpe Mfg. Company and the Hendey Machine Company. For installation in the plant of Vickers' Son & Maxim, Mr. Churchill purchased four large boring and turning mills from the Bullard Machine Tool Company. With the Newton Machine Tool Company of Philadelphia, an order was placed for a number of large radial drills which will be used in drilling armor plates at the Brown Works, Sheffield. Mr. Churchill sees a growing tendency among the large English manufacturers to adopt American tools. He speaks highly of the future conditions for English business.

Arrangements were made by Mr. Churchill with certain American firms for a display of their tools at the coming Glasgow Exhibition, which is said to command a good deal of attention from English and European machinery merchants and builders.

Regarding the purchase of equipment for the new arsenal buildings which are being erected at Tokio, Osaka and other Japanese cities, we are informed that contracts have been placed by the Japanese representatives who are now in this country. The principal lines yet to be purchased are pneumatic tools and air compressors. The machinery which was purchased in this country was secured by the American builders in the face of severe European competition. From England the competition was extremely strong, and that a large number of tools were purchased in England is not to be taken with any great surprise, as the Japanese have been educated to the use of the English tools, and know comparatively little about those made in this country. Some of the machinery purchased here was secured through the Japanese firm of Takata & Co. of 10 Wall street. This concern also operate an establishment in England, where large orders were placed for English tools. The electrical equipment, consisting of motors, generators, switchboard and transformer, was purchased from the Westinghouse Electric & Mfg. Company of Pittsburgh. The engine order went to McIntosh & Seymour, who will furnish three 450 horse-power vertical compound units. Among the American concerns who were fortunate in capturing machine tool orders were: Pratt & Whitney, Cincinnati Milling Machine Company, Prentice Bros. of Worcester, Wiliam Sellers & Co., Limited, the Becker-Brainard Milling Machine Company, the American Tool Works Company and J. A. Fay & Egan Company. An order for six electric traveling cranes was awarded to the Morgan Engineering Company. S. Kumazaki, who is here to inspect the material before it is shipped, will be in New York next week.

An attempt is being made to effect a consolidation, or, at least, formulate some working agreement, among the principal makers of emery wheels. The negotiations have been carried on very quietly, and it is difficult to ascertain the exact status of the scheme. Salesmen representing prominent makers are telling a story of the certain success of the project, and are soliciting big orders in anticipation of an advance of prices which they forecast. On the other hand the representative of an important concern states that after a number of meetings the various manufacturers have been unable to get together owing to obstinacy of certain important interests. He states that a chairman has been appointed, who is keeping the matter alive, and that the last meeting, which was held in Philadelphia a short time ago, was adjourned subject to the call of the chairman. The salesmen who are urging buying on the strength of the scheme state that the plans provide for a standard price-list and standard discount to be adhered to by all of the large interests. The Carborundum Company are spoken of as the only concern who are not to be a party to the agreement. The plans, it is said, contemplate a net advance of about 20 to 25 per cent. The list prices according to these plans are to be advanced from 25 to 50 per cent, and the discount, which at present amounts to about 75 per cent., is to be widened 5 per cent. In support of this action it is said that the makers of loose emery have advanced prices so rapidly of late as to make concerted action of some sort desirable.

The matter of boilers in connection with the new 24,000 horse-power station of the Brooklyn Rapid Transit Company has not come up as yet. It will be recalled that the order for engines was awarded to the Dickson Mfg. Company of Scranton, Pa. The station is to be located at Third avenue and Second street, Brooklyn. The construction work is under the direction of C. E. Roehl, who is acting in the capacity of electrical engineer. T. E. Murray, who is general manager of the Edison Company at Duane street, is consulting engineer for the Brooklyn company. T. C. Breckenridge, 168 Montague street, Brooklyn, is general manager.

Prices of horizontal return tubular boilers are said to be weakening somewhat, while the builders of water tube boilers are talking of another advance.

Awards have not been made as yet in connection with the two 15,000,000-gallon pumping plants for which the city of New York received bids on the 17th inst. The authorities state that the matter is still in the hands of Chief Engineer Birdsall of the Water Department, and is awaiting his decision. In the trade it is said that the lowest bid received for crank and fly wheel engines is in excess of the appropriation. As the specifications call for this type of engine, it is possible that the matter will be again held in abeyance, although one concern put in a bid on a horizontal pressure type of engine

which came within the appropriation. The latest municipal pumping engine job which has come up in this section is a small one, which is for Atlantic City, N. J. It is a 3,000,000-gallon high duty, and the bids will be opened on February 11. The specifications and proposal blanks are now ready, and are being sent out by W. C. Hawley, superintendent of the Water Department. The Water Commissioners are Louis Kuehnle, Edward A. Reiley and Rufus Booye.

There are a number of good propositions now before the valve manufacturers. The high pressure trade are very much interested in a large German deal which is slowly approaching the stages of consummation. It is to come through private sources, but it is understood to be for the German Government. An official of the Imperial Government was in this country on two occasions last year obtaining data on the matter. A good number of extra large and heavy valves are required.

A number of large buildings which are nearing completion are also of interest now. Besides the new New York sky scrapers, there is the large addition to the Prudential Insurance Company's building at Newark, N. J. This matter is now up. The numerous large ships which are under way and contracted for are also furnishing a good outlet for high pressure valves. The batch of vessels which the Navy Department have just contracted for are also to be considered. The monster electric power stations now in course of construction in this city will soon be found on the market for large and heavy types. On all sides the outlook is very encouraging and prices are holding up well.

In gate valves the most important item now on the *tapis* is the Cleveland, Ohio, municipal work. The bids will be received at the office of the clerk of the Board of Control, 105 City Hall, until noon, February 15. The valves will range in size from 3 inch to 48 inch, inclusive, and the contract will be made for furnishing all of the valves required by the city during the ensuing year. Bids will also be opened at the same place and time for such fire hydrants as will be required during the year of 1901. There will be required approximately 250 4-inch and 30 6-inch hydrants. In addition to this work the Water Works Department will also purchase such cast iron water pipe and special castings, from 3 to 60 inches, inclusive, as may be required during the present year. The above three matters are under the supervision of Walter P. Rice, Director of Public Works, Cleveland, Ohio.

Bids will be received by the Bureau of Yards and Docks, Navy Department, Washington, until March 16, for completing the construction of a saw mill, boiler house and steel chimney at the Mare Island (Cal.) Navy Yard.

Contracts are still being placed by the Pennsylvania Railroad Company for apparatus required in equipping the new saw mill which they are building in addition to their "Meadows" shops, near Jersey City, N. J.

Arrangements have been made by the C. W. Hunt Company whereby several European manufacturers will build the various lines of coal handling, conveying and special machinery of the American concern in their respective territories. The machinery which will be required throughout Great Britain and the colonies is to be built by the Babcock & Wilcox Company. Mastrand, Helwig & Co. of Copenhagen are to build the machinery required in Norway, Sweden and Denmark. The apparatus required in Germany and Southern Continental Europe is to be built by J. Polig & Co. of Cologne.

The Ashton Valve Company of Boston, Mass. manufacturers of pop safety valves, pressure and vacuum gauges, announce that Sidney A. Stephens of 22 St. John street, Montreal, Canada, has been appointed agent for the Dominion of Canada.

A considerable scarcity of small billets for prompt shipment is reported, and it is claimed that an order for prompt delivery was recently refused by two mills in the Pittsburgh district, being unable to make deliveries.

The Chicago Machinery Trade.

Office of *The Iron Age*, 1205 Fisher Building,
CHICAGO, January 26, 1901.

Machinery dealers report that trade is not what they had anticipated it would be. Many inquiries are coming in, but orders are few and for small lots. No large contracts for machine tools are reported, and the sales recently closed were for single tools or small equipments for additions to established plants. Prospects are very good, if hope for the future is to be based on the number of inquiries. The most promising prospects of better business are with the railroads. The large systems are known to contemplate extensive additions to their shop equipment, in pursuance of their policy of doing more of their own work, not only in making repairs but in turning out new rolling stock. They are also giving some attention to the manufacture of supplies of various kinds. The railroad demand, however, will be mainly for heavy tools, which are built by only a few establishments. Hence the general machine tool trade may not be greatly benefited by an improvement in this particular direction. Competition for business is growing sharper. A manufacturer who was in the market last week for an equipment of standard tools amounting to $5000 found the dealers eager for the order, and it is reported that some sharp cutting was done. The United States Government officials are moving very slowly in awarding contracts for the Rock Island Arsenal. The subject, however, does not lose its interest with the passage of time, and the announcement of the names of the fortunate bidders is awaited with as much patience as possible.

Most of the Chicago foundrymen are complaining of slow business. The work coming forward is not as heavy as expected, and in some cases is less than in January, 1900. The general foundries are principally doing repair work, or are filling orders that were placed last fall.

John Ramsey, who occupies the old Clark, Raffin & Co. foundry, at Ohio and Kingsbury streets, Chicago, has contracted for the purchase of a south side site for a foundry plant and a building to be erected for his occupancy. The property is 125 x 383 feet, and is located on the southeast corner of Sixteenth and Lincoln streets.

The Fort Wayne Foundry & Machine Company, formerly operated under the name of John H. Bass, will remove their Chicago works from Forty-seventh street and Wentworth avenue to a tract of land owned by the Chicago Junction Railway Company, west of Ashland avenue and on Forty-third street. The foundry company have arranged to lease 6 acres at this point for a term of 15 years. Their extensive buildings at the present location are of steel frame construction and can be taken down and moved to the new site. For many years the Bass foundry has been located on Rock Island Railroad property, and the occasion of the removal now is the demand on the part of the railroad for more space for roundhouses and storage houses. The main building of the plant is 475 feet in length. The Junction railway's tracks will furnish the new plant with switching services. The land to be occupied by the foundry plant has 653 feet frontage on Forty-third street, and is 400 feet deep. Arrangements have been made for the temporary use of a foundry plant near Hammond, Ind., while the removal is under way.

Barton, Maas & Co., general founders, Nineteenth and Rockwell streets, Chicago, have purchased considerable foundry equipment, consisting of cupolas, flasks, motors, &c., and will at once extend their plant and increase their force of men.

The R. M. Eddy Foundry Company, 43 to 61 Indiana street, Chicago, will erect an addition to their foundry. The building will be of mill construction, two stories in hight and 50 x 100 feet in size.

The Reder Foundry Company, 183 to 185 Newberry avenue, Chicago, are erecting an addition to their tracks. The new building will be 25 feet wide, 100 feet long and two stories high. It is of iron and steel construction and will be used as a foundry and pattern shop. The company report that they have work enough ahead to keep them busy the next six months.

A new building, 50 feet wide and 100 feet long, has been added to John Monighan's machine works, 811 to 815 Carroll avenue, Chicago. The addition is two stories high and of iron and steel construction. The firm are installing a new 10-ton electric traveling crane, a 6-foot 16-foot bed Pond planer, and other heavy equipment. The capacity will be increased 200 per cent., and room will be provided for 200 machinists. The firm have just added the manufacture of hoisting machinery and cranes to their products.

The Vulcan Iron Works, Clinton street and Milwaukee avenue, Chicago, have just completed a drawbridge for the Chicago, Burlington & Quincy Railroad, at Beardstown. They are also making a turntable for the Chicago & Northwestern Railroad, at Chicago.

The Featherstone Foundry & Machine Company, 348 to 358 North Halsted street, Chicago, are building three complete ice and refrigerating plants, comprising 25, 65 and 125 ton machines. They are also building large dredges for South Chicago contractors.

Granville Kimball, Chicago manager of the Springfield Boiler & Mfg. Company, Springfield, Ill., reports that orders have been received from Mexico for 3250 horse-power internally fired Scotch marine boilers. The company now have orders on hand for 22 of their internally fired boilers fitted with Morrison corrugated furnaces.

The Tarrant Foundry Company, 46 to 66 Indiana street, Chicago, have secured the contract for furnishing the castings for the coming year for the Miehle Printing Press & Mfg. Company, Chicago.

John Mohr & Sons, boiler makers, 36 Illinois street, Chicago, will furnish the Colorado Fuel & Iron Company, Pueblo, Col., with the plate work for new blast furnaces, hot blast stoves and all connections for their new steel plate and rail mills. The firm have under consideration plans for a new building, to be occupied as general offices and for light manufacturing.

The Murphy Stoker Furnace Company, Bedford Building, Chicago, have made an improvement in their automatic stoker furnaces, substituting plate steel columns for the brick construction formerly used. This improves the circulation of the air, and keeps the base of the furnace from getting hot. The company have contracted to install 12 stoker furnaces in the new plant of Armour & Co., Chicago; two in the Inter-Ocean Building, Chicago; four in the works of the American Copper Smelting & Refining Company, Perth Amboy, N. J., and two in the plant of the Fletcher Paper Company, Alpena, Mich.

The Cleveland Machinery Market.

Office of *The Iron Age*, The Cuyahoga,
CLEVELAND, OHIO, January 28, 1901.

The new year seems to have brought a marked improvement in business to the manufacturers of this city; yet there appears to be a feeling with many that the larger deals have not materialized as quickly as they should. Nearly every one is exceedingly busy and there is a cheerful aspect to the whole situation, but many of the big things which were confidently expected at this time are not yet closed. On the other hand there are reports that certain factories are running short handed, indicating that in some quarters the outlook is not so promising. The large majority of business now on books is for domestic requirements and on nearly every hand is heard the statement that the foreign trade is showing a falling off. Manufacturers of machine tools say that the larger sizes still have the call and dealers report that there has been a shading of prices on certain lines of smaller tools. Agents for engine manufacturers report that they are far behind on orders, with a very large amount of business in sight in this section. Electric railway projects hold the center of the stage for engine and boiler makers and the inquiries from these people appear to be growing more numerous. The great difficulty with all electric railway projects is that they are promoted on borrowed capital and the promoters are anxious to commence operations at the earliest possible moment after placing their contracts; in nearly every case they demand deliveries which are almost out of the question.

There has been considerable activity in the sale of second hand machinery during the past month and dealers in these goods say that the demand is excellent. The unloading of a large stock of bicycle machinery by one dealer has caused a decided flurry and a number of dealers in new tools have bought up considerable of the stock as a speculation.

Labor difficulties are again being talked of. Last week the union core makers at all the local foundries left their work upon the refusal of the Foundrymen's Association to agree to all the terms of the scale which has been in force during the past year. Three days later the men returned to work upon an agreement to settle the difficulty by arbitration. The foundrymen insist on the adoption of the Milwaukee agreement, which differs from the one that has been in force, in that the foremen need not be union men, and makes the employer the judge of the ability of the workman instead of the union. There is no change in the molders' strike. The Foundrymen's Association claim to have about 290 men at work in the various foundries and say that they are making steady gains. Machinery manufacturers report that they are now securing a larger portion of their castings from local foundries, and that in quality the goods are satisfactory. The bonus to the non-union men will be continued until June 1 and as long thereafter as necessary, according to Secretary Penton of the National Association.

There is pronounced activity among local manufacturers of beet sugar machinery and from all reports more new beet sugar plants will be erected this year than ever before. In addition to the two plants in Michigan referred to last month the Kilby Mfg. Company have secured a contract to erect and equip a large plant in Colorado. They are securing figures on boilers of about 3000 horse-power for the three plants and will require engines of about 100 horse-power each. E. H. Dyer & Co., sugar machinery, have secured a contract for a 400-ton plant for the Logan Sugar Company, Logan, Utah. This is the sixth plant they have built in that State for Utah capitalists. They have also contracted to enlarge the plant of the Lehigh Sugar Company, Lehigh, Utah. The capacity will be 1000 tons per day, making it one of the largest in the country. The plant of the Continental Sugar Company at Fremont, Ohio, the only plant of the kind in this State, is to be enlarged to 800 tons capacity. Boilers of about 4500 horse-power capacity will be required for the three plants, as well as engines and considerable hydraulic machinery.

The Atlas Car & Mfg. Company, operated by the Atlas Bolt & Screw Company, have secured a contract for equipping the new plant of the American Axe & Tool Company, Glassport, Pa., with their industrial trolley system, including tracks, switches and cars. They are also equipping the plant of the Simonds Mfg. Company, Chicago, with an industrial railway equipment. They are shipping a number of copper mining cars to Mexico and report an unusually heavy demand from foreign countries. Their domestic trade has never been better.

The Chisholm & Moore Mfg. Company have had an unprecedented month in their crane and pneumatic hoist departments. Among others they have secured the following contracts: A 25-ton pneumatic crane for Heiperhausen Brothers, New York City; three 5-ton pneumatic hoists for the Atlas Engine Company, Indianapolis; a 15-ton hand power crane for a Dayton concern; three hand power cranes for the Elwell-Parker Electric Company, Cleveland, and a number of small orders for pneumatic hoists.

The Ajax Mfg. Company say there has been an increase in the demand for forging machinery during the past month, orders running to the larger sizes. They are shipping a number of large machines for railway work.

The Garry Iron & Steel Roofing Company have had an excellent month in their crane department, while the demand in their structural iron department has

fallen off somewhat. They are building two cranes for El Paso, Texas; one for the New York Central Railway at Buffalo; one for the James Robins Dry Dock Company, Brooklyn, and one for the Vulcan Iron Works, Wilkes-Barre, Pa. They are figuring on several large contracts for structural material in Cuba and South America, which will be closed in the near future.

The Brown Hoisting Machine Company, whose plant was destroyed by fire a month ago, have distributed their unfinished work among ten different concerns in this vicinity and hope to complete a greater portion of it without any great delay. They have roofed over the walls of their largest building and have a temporary shop 300 x 50 where they are completing work which cannot be done elsewhere. They have equipped this with a few tools which were slightly injured and with new machinery, much of which was obtained from the stocks of local dealers. In all about 50 new tools have been purchased during the past two weeks. They are at work on two other temporary shops which will be located in their yards adjoining the ruined plant and are contracting for machinery to equip these. They have not yet adopted plans for their new plant and it will probably be 30 days before they can commence work. The buildings will be modern, largely of steel and as nearly fire proof as it is possible to make them. It has been decided that the machinery will be electrically driven and there will be an independent power plant.

The Lake Shore & Michigan Southern Railroad Company have officially announced that their round house and repair shops, at present located in Cleveland, are to be removed to Collinwood, 8 miles from this city, where a very large plant is to be erected. They have acquired a site of about 8 acres and plans for the buildings have been drafted and approved, so that work will start at once. It is estimated that the building and equipment will cost $1,000,000 and work will be furnished for 600 or 700 men.

The local office of the Buckeye Engine Works, Salem, state that their business at present is the heaviest ever known. On small engines they are not agreeing to deliver before May, and on larger engines not before July 1. They are building and installing eight 1500 horse-power engines for the Sharon Steel Company, Sharon, Pa., and have just contracted for a 2000 horse-power cross compound engine, cylinders 30 and 60 x 60, for the Indianapolis Street Railway Company, Indianapolis. Four large engines installed about three months ago in the LaBelle Iron Works plant have been accepted and paid for, which is considered a remarkable record for such a large plant.

The River Machine & Boiler Company are installing a large steam conveying system in the plant of the Cleveland Electric Railway Company. The exhaust steam is conveyed by 700 feet of 40 and 48-inch riveted steel pipe to the adjoining plant of the Cleveland Salt Company. They are also extremely busy on marine repair work, more of which is being done in this city this year than ever before.

The Reliance Machine & Tool Company, manufacturers of bolt cutting machinery, are preparing to push their business more extensively than ever before and have appointed Charles K. Thomas, formerly advertising manager of the *Railway Age*, Chicago, as sales manager. Mr. Thomas will cover the country from the local offices, selling to manufacturers.

George H. Bowler, the local machinery dealer who is disposing of the unavailable machinery from dismantled plants of the American Bicycle Company, is meeting with decided success in the work and the sale is attracting great attention in all parts of the country from those who are in need of small machine tools. During the past 30 days his sales have amounted to more than $40,000, and judging from the large number of inquiries the stock will be cleared without difficulty. He is just receiving a heavy consignment of machinery from various plants at his warehouse in this city, including a number of heavy presses and automatic screw machines of all sizes.

Foot, Burt & Co., manufacturers of multiple drills, state that since the first of the year their business has improved beyond all expectations. They are now from three to four months behind on orders and they find their present quarters entirely inadequate for their needs. They are casting around for a site in this city and will probably build in the spring. They have recently shipped a number of large sized multiple drills to concerns in the Pittsburgh district.

The City Board of Public Works rejected all bids entered a month ago for the rolling lift bridge to be erected in this city, and last week opened new bids. The figures for the superstructure were as follows: G. W. Doerzbach, $60,822.50; King Bridge Company, $63,831; American Bridge Company, $64,092.50; Andrew Dall & Sons, $65,000; Variety Iron Works, $70,537.50; The Massillon Bridge Company and the Toledo Bridge Company made informal bids. The lowest previous bid for the work was that of the King Bridge Company, $63,930.

The American Shipbuilding Company have closed contracts for the construction of two passenger steamers which will be larger than anything of the kind on the lakes. The operating company have not yet been organized, but they are composed of Cleveland, Detroit and Buffalo parties. The deal was made by A. McVitte of Detroit. The boats will operate from Detroit to Buffalo, stopping at Cleveland, and will be scheduled to make the trip of 256 miles in 12 hours. They will be 400 feet long, about 75 feet longer than the City of Erie, the present largest sidewheeler, and will have 20 per cent. greater passenger and freight capacity. The aggregate cost will be about $1,300,000 and they will be built at the Detroit yards.

The Vulcanus Forging Company say they are busier than ever before, but largely on small orders. They say there has been a steady increase in the price of forgings during the past two weeks and they look for a material increase during the next 30 days.

The W. S. Tyler Company are having plans prepared for a new power house. George S. Rider, Century Building, is the engineer. Engines and boilers of about 500 horse-power capacity each, a generator of about 250-kw. capacity, and auxiliaries, will be required. Mr. Rider is also engineer for an addition to the power plant of the Cleveland Twist Drill Company. He has placed contracts for a 400 horse-power Ball & Wood engine, 400 horse-power Babcock & Wilcox water tube boilers with automatic stokers and a 250-k.w., two phase Westinghouse generator.

The Pelton Engineering Company have disposed of their former plant to the Elwell-Parker Electric Company and have secured a factory at Merwin and James streets, where they are carrying a large line of electrical apparatus as well as machine tools. They are also designing engineers.

The Acme Machinery Company have experienced a marked improvement in their domestic trade during the past 30 days, but the foreign demand has fallen off considerably. They have recently shipped several of their largest sized 25-ton bolt and nut machines to an Eastern concern.

The American Bridge Company have contracted for the erection of a double track railroad bridge for the Pittsburgh & Lake Erie Railroad, to span the Monongahela River at Homestead. The bridge includes a long approach and four large spans. The greater part of the material will be turned out at the Youngstown branch of the American Bridge Company.

The various limestone companies in the Shenango valleys have posted notices of a reduction in wages from 20 to 17½ cents a ton, to take effect February 1. The wage scale for mining limestone is fixed by agreement on the selling price, which in turn is affected by the price of Bessemer iron.

The Pittsburgh Coal Company have purchased two tracts of coal territory in Washington County, Pa. One tract was bought from Park Brother & Co., Limited, and contains 1200 acres, while 800 acres adjoining were bought from the Snee heirs. The price paid for the land was said to be $150 per acre.

HARDWARE.

Catalogue House Competition.

On another page we print a suggestive article which touches at many points the question as to the business of department stores and catalogue houses. The view taken by our correspondent is quite different from that which has often been expressed by Hardware merchants in our columns, and from that which is presented when the matter is looked at merely from the ordinary point of view of the merchant who finds his trade disturbed by this form of competition. It is not unlikely that some Hardwaremen, wholesale and retail, will be disposed to take exception to some of the positions taken in the article, and may possibly be disposed to look upon the writer as almost placing himself in the attitude of an enemy of the trade. We desire, however, to say in defending him against this accusation, that he is one who has been and is still actively connected with the Hardware business, in whose success and welfare he is unquestionably interested. The criticisms on the manner in which the subject is sometimes regarded by merchants are to be taken as coming from a friendly and not from a hostile source.

The condition of things described in the article and the facts which are given in illustration of some of the positions maintained by the writer should be borne in mind as presenting some of the elements of the problem which confronts the trade. The disapproval expressed or implied of methods which are pursued by Hardware merchants in the presence of competition which is confessedly taking some of their business deserve consideration, and may suggest the necessity of some change in Hardware methods so as to meet in a practical and immediate way the effects of catalogue house and department store methods. The lack of wisdom in some prevalent features of the Hardware business, both in regard to the buying and selling of goods, will be suggested by a perusual of the article. As giving what may be an unusual and perhaps unpopular view of the subject we commend it to the trade. Nothing is to be gained by shutting the eyes to the facts in the case, or in refusing to consider the matter in all its aspects.

The Buying of Seasonable Goods.

Of late manufacturers have been coming into the field earlier and earlier each year with seasonable goods in their desire to outstrip each other, until it has become a question as to whether the matter has not been overdone and gone beyond the bounds of good reason.

Goods are bought so far ahead principally for two reasons—first, to obtain a low price, and secondly, to make sure of getting the goods, since when the season is really on it is always difficult to get orders filled promptly. It is a common experience that in years of advancing prices seasonable goods are always bought unusually early, while there is a natural tendency to defer placing orders when a decline is looked for. As the tendency of prices is probably downward about eight years out of ten the chance of advance is but limited as compared with that of decline.

Where the price is guaranteed by the seller the purchaser is, of course, protected against such decline.

The best time to buy must always be largely a matter of judgment and experience, but it should be remembered that after sufficient forethought has been exercised it is not necessarily the earliest one in the field who buys to the best advantage.

Condition of Trade.

The indications point, on the whole, to a gradual and satisfactory quickening of the demand. Recent orders coming in to manufacturers are referred to as many in number and covering in the aggregate considerable quantities of goods, and within the past few days there has apparently been an increase in the volume of trade. Some manufacturers, however, speak of a certain backwardness on the part of merchants and report a slight falling off in business, but this is probably only as a result of fairly active purchases in the early part of the month, and does not reflect the general experience. Most factories are fully occupied on orders, and some complain that they have little opportunity to accumulate stocks for the urgent demand which is likely soon to set in there is, however, little fear of anything like a scarcity of goods, except possibly in one or two seasonable lines, because the capacity of manufacturers in almost every branch is more than sufficient to supply the requirements of the trade. There is a gradual revising of prices, and a good many minor changes are reported, but, as a rule, prices are not forced down so ruthlessly as has often been the case. The growing export business is becoming more and more a relief to the home market, and many manufacturers find an outlet in this way for surplus goods.

Tone of the Market.

The important fact, so far as market values are concerned, is the announcement on Tuesday of an advance of $2 per ton in the products of the American Steel & Wire Company. This came upon the trade as a surprise, although it had been contemplated as a possibility.

There may be some difference of opinion as to the wisdom of the advance, as it will tend to stimulate competition, which, however, is not as yet at all a serious matter; but the effect on the market will probably be to give a more confident tone to values. There has of late been a good deal of activity in Nails and Wire, and the trade have been purchasing considerable quantities; but it is not thought that this was done in anticipation of the advance, as there was no public intimation that it was coming. In most lines of General and Shelf Hardware the market is held pretty steadily, with a very gradual drift toward somewhat lower values. The changes which are taking place are not, however, of sufficient importance to prevent the trade from buying in quantities to meet their requirements, and both wholesale and retail merchants are placing orders to keep their stocks up to a good working size. There are, indeed, some who think that with the passing of the dull season, which should now be nearly over, there may be a strengthening in values and some slight advances.

Special Reports.

Chicago.

(By Telegraph.)

Business in Shelf Hardware is increasing. Jobbers report an extraordinarily heavy mail this week, orders coming in freely, both from traveling representatives and from the trade direct. Retailers are continually obliged to replenish their stocks. The demand, as heretofore stated, is of a general character, covering the entire line of Hardware. The purchase of new stocks continues to swell the aggregate of sales handsomely. The National Association of Carriage Builders are holding their

convention in this city this week and are making an exhibition of new Carriages and Harness in the Coliseum. This has attracted a large attendance of retail Hardware merchants from the country, who also handle vehicles and implements. They are taking advantage of the opportunity to call upon the jobbing trade, and in nearly every case have placed good orders for Hardware. A much larger influx from the country is expected next week when there will be one of the regular periods of merchants' excursions. Jobbers report practically no change in prices. They are holding firm to $1 for Wire Cloth and report that all the leading manufacturers have sold their season's output and that the condition of the trade from the local standpoint is very satisfactory. Heavy Hardware jobbers are enjoying a large business, their tonnage running in excess of that of last January. Some houses report the past week the greatest in their history in point of tonnage. The Tin Plate trade is in remarkably good condition for the season. The demand for Bright Plate is heavy, while an unusually good business for midwinter is being done in Roofing Plates.

St. Louis.

Traveling men are sending in numerous orders, and many of them for an extensive line of goods. Merchants seem to be generally prosperous and more inclined to place their stocks in good shape for the coming season. That money is more plentiful is seen by the greater promptness with which running accounts are being paid and new bills discounted. This is especially true of the Southern trade, who are reaping the benefits of last season's satisfactory crops. The Southern trade is buying quite liberally, with especial mention to be made of Southern handled Hoes and Trace Chains. Quite a good movement of Steel Goods is noticed. Edge Tools are in large demand for the season. The lumber industry is very active, and taking good quantities of Axes, Cross Cut Saws and Steel Wedges. The Rope market is said to be in very good condition at advanced prices and an active demand. Sales of Wire Nails, Barb Wire, Poultry Netting and Wire Fencing are very extensive and, it is claimed, with some little embarrassment as to deliveries. Wire Screen Cloth is in good call, as are Window Screens and Doors. The movement of Locks, Strap and T Hinges, Butts and Builders' Hardware is unusually active, the weather being all that could be desired for out door work. Jobbers say it is a problem in some lines to get much needed supplies, factories in many cases having their capacity severely taxed. The Heavy Hardware jobbers are enjoying very good trade without material change from conditions of last week. It is seen that local Buggy and Carriage manufacturers are having a large amount of business and making early shipments.

Notes on Prices.

Wire Nails.—An advance was made on the 29th inst. by the American Steel & Wire Company to take effect at once, of $2 per ton on Wire Nails and Plain and Barbed Wire. The advance came unexpectedly to the trade, as no intimation had been given of an advance at this time. It should be borne in mind, however, that shipments from Pittsburgh after February 1 to points affected by the reduction in freights will not net the full advance of 10 cents. The announcement of a reduction in freight rates has not had the effect of increasing orders for future delivery to any noticeable extent. Quotations at the advance are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots	$2.30
To jobbers in less than carload lots	2.35
To retailers in carload lots	2.40
To retailers in less than carload lots	2.50

New York.—A seasonable demand for small lots of Wire Nails from store is being experienced at this point. Some irregularity has resulted from shading prices, equivalent to a part of the difference between the present and future freight rates. The advance in the price of Wire Nails at New York resulting from the increase at mill will be partially offset by the reduction in freight, making a net advance of 5 cents per keg. We accordingly quote as follows:

To retailers, carloads on dock	$2.53
Small lots at store	2.60

Chicago, by Telegraph.—The last week of January has thus far kept up the excellent record of the month for large trades. The business of the month has been far beyond expectations. Stocks are small everywhere, the Nails going evidently directly into consumption. The American Steel & Wire Company find their present producing capacity not equal to the requirements of their trade and are expecting to shortly put their New Castle plant in operation. This plant has been closed for nine months. All the other factories of the company have been in active operation for some time. Local jobbers report an excellent trade from stock. The advance of 10 cents per keg results in the price of $2.45 for carload lots, with the usual advance for small lots from stock.

St. Louis.—Carload orders for Wire Nails are keeping up in good form. Liberal buying in smaller quantities continues, the entire sales taxing factories quite heavily. Deliveries on Wire Nails are said to be somewhat behind the demand.

Pittsburgh.—We note a fair demand for Wire Nails considering the season of the year. All indications point to a very active building season this year, and it is expected that consumption of Wire Nails will be heavier than ever before, owing to the reduction in freight rates which goes into effect on February 1, delivered prices of Nails being reduced in proportion. The present rate in carload lots from Pittsburgh to New York is 18 cents, but this will be reduced to 13 cents. To Philadelphia the rate will be reduced to 12 cents and to Buffalo 9 cents. The price of Wire Nails has been advanced 10 cents per keg, taking effect January 29. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots	$2.30
To jobbers in less than carload lots	2.35
To retailers in carload lots	2.40
To retailers in less than carload lots	2.50

Cut Nails.—The manufacturers, who have been in session to-day, have made an advance of 5 cents per keg, as it has been their usual custom to follow an advance in Wire Nails by increasing the price of Cut Nails. Quotations accordingly are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. off in 10 days:

Carload lots	$2.00
To jobbers in less than carload lots	2.05
To retailers in less than carload lots	2.15

New York.—There is nothing of importance in the local Cut Nail market except advance of 5 cents made to-day, which about offsets reduction in freight which goes into effect February 1. Requirements are small at this season. Prices are as follows:

To jobbers in carload lots on dock	$2.13
To jobbers in less than carload lots on dock	2.18
To retailers in less than carload lots on dock	2.31
Small lots from store	2.25

Chicago, by Telegraph.—While the demand shows no increase the volume of business keeps up to its recent average. Carload lots are held at $2.15 and small lots from stock at $2.25.

St. Louis.—Buying of Cut Nails is of fair volume at unchanged price of $2.30 to $2.40, base.

Pittsburgh.—Demand for Cut Nails is only fair, but we are advised prices are being firmly held. Delivered prices on Cut Nails will be proportionately lower after February 1 when the reduced freights go into effect. We quote f.o.b. Pittsburgh, terms 60 days, 2 per cent. off in 10 days, as follows: Carload lots, $1.95; jobbers, less than carload lots, $2.

Barb Wire.—An advance of $2 per ton in the price of Barb Wire at Pittsburgh was made by the American Steel & Wire Company on January 29, the advance taking effect at once. It is not thought probable that the advance will have much effect upon the demand for spring trade which, it has been expected, would be large. At points affected by the reduced freight rates the cost of Wire will be reduced in proportion to the lower rate.

Quotations for domestic trade are as follows, f.o.b. Pittsburgh, net cash 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots, Painted	$2.60
To jobbers in carload lots, Galvanized	2.90
To jobbers in less than carload lots, Painted	2.65
To jobbers in less than carload lots, Galvanized	2.95
To retailers in carload lots, Painted	2.70
To retailers in carload lots, Galvanized	3.00
To retailers in less than carload lots, Painted	2.80
To retailers in less than carload lots, Galvanized	3.10

Ellwood and Baker Wire is 5 cents and Washburn & Moen Glidden 10 cents per 100 higher than the foregoing prices.

Chicago, by Telegraph.—Manufacturers report up to the present time a continued good demand and light stocks. A sustained heavy trade is reported in Woven Wire Fencing, with the largest manufacturers 30 days behind in shipments. Jobbers are also having a fair trade in small lots from stock. At the 10-cent advance quotations are as follows: $2.75 for carload lots of Painted and $3.05 for Galvanized Barb Wire. Small lots from stock are selling at the usual advance.

St. Louis.—A very heavy tonnage has been shipped and seems to be put into immediate use by the farming interests. More attention is being paid to farm repairs than heretofore, which may be properly attributed to the better financial conditions prevailing. The price at the advance of 10 cents for Painted in carloads to retailers is $2.80. Galvanized is 30 cents higher.

Pittsburgh.—Shipments of Barb Wire have been held back a good deal, awaiting the lower freight rates which go into effect on February 1. In some cases the cut is quite heavy, to New York being 5 cents per 100 pounds. It has been believed that spring trade in Wire would be large this year. For domestic trade at the 10-cent advance made on Tuesday we quote: Galvanized Barb Wire, $2.90, in carload lots to jobbers, and Painted, $2.60. Terms 60 days net, 2 per cent. discount for cash in 10 days, f.o.b. Pittsburgh.

Plain Wire.—The advance of $2 per ton made by the American Steel & Wire Company on January 29, to go into effect at once, advances the Pittsburgh price of Plain Wire to that extent. The reduced freight rates will affect shipments favorably to points to which they apply. New quotations are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. off for cash in 10 days:

	Base sizes. Plain.	Galv.
To jobbers in carload lots	$2.25	$2.65
To jobbers in less than carload lots	2.30	2.70
To retailers in carload lots	2.35	2.75
To retailers in less than carload lots	2.45	2.85

The above prices are for the base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the advances indicated in the following table:

Plain Fence Wire Advances (Catch Weights).

Nos.					Galvanized.
6 to 9	Base				$0.40 extra.
10	$0.05	advance	over	base	.40 "
11	.10	"	"	"	.40 "
12 and 12½	.15	"	"	"	.40 "
13	.25	"	"	"	.40 "
14	.35	"	"	"	.40 "
15	.45	"	"	"	.75 "
16	.55	"	"	"	.75 "
17	.70	"	"	"	1.00 "
18	.85	"	"	"	1.00 "

For even weight bundles, 50 pounds or over, 5 cents per bundle advance on above.

Chicago, by Telegraph.—Manufacturers report a good volume of business thus far during the month, but it is by no means coming up to its old time proportions, as so much of their Wire product is now placed directly on the market in the form of Woven Fencing. Carload lots, Chicago delivery, at the 10-cent advance should be quoted at $2.40, base; small lots from stock at the usual advance.

Pittsburgh.—Shipments of Plain Wire have been held back until after February 1, when the reduced freights go into effect. There is a fair demand, which promises to be much larger when spring trade opens. For domestic trade we quote at the advance just announced:

	Plain.
To jobbers in carload lots	$2.25
To jobbers in less than carload lots	2.30
To retailers in carload lots	2.35
To retailers in less than carload lots	2.45

Galvanized Wire up to No. 14 is 40 cents advance on Plain; Nos. 15 and 16, 75 cents advance, and Nos. 17 and 18, $1 advance. Terms are 60 days net, with 2 per cent. off for cash in 10 days, f.o.b. Pittsburgh.

Table Cutlery.—The manufacturers of Table Cutlery who are working in harmony are completing their plans for the marketing of the goods which they control, including iron, wood and bone handle goods, establishing prices and a revised system of rebates based on quantity purchases during six-month seasons.

Poultry Netting.—The market for Poultry Netting is in the main in a fairly satisfactory condition, but shows some slight concessions under pressure. The price which the manufacturers hoped that it would be feasible to maintain during the season has yielded somewhat. Competition has been active between the manufacturers, and it is claimed also that the jobbing trade have been offering goods at very low prices, thus tending to weaken the general tone of the market.

Shot.—The following revised prices are announced by the Eastern manufacturers under date January 21, terms net cash 30 days, or 2 per cent. discount for cash in ten days, with the usual abatement on ton lots:

Drop Shot, sizes smaller than B, per 25-lb. bag	$1.25
Drop Shot, B and larger sizes, per 25-lb. bag	1.30
Buck and Chilled Shot, per 25-lb. bag	1.30
Dust Shot, per 25-lb. bag	1.50

Wire Cloth.—There is some unevenness in the Wire Cloth market, as represented by the quotations of both manufacturers and jobbers. The low prices made by some makers are not, however, to be taken as representative of the market at large, in which the principal manufacturers are maintaining prices pretty steadily, some, indeed, anticipating that with the advance of the season and the possible development of a scarcity higher values will rule. The price to retail merchants who buy in ordinary small lots may be named as about 95 cents to $1, a slightly lower figure being obtainable by those who buy in round lots from the manufacturers.

Glass.—Under date of January 21, the National Window Glass Jobbers' Association adopted a new list, to conform with the new list of the manufacturers as far as the relative difference of the brackets are concerned. The list is as follows:

Bracket—United inches.	Sizes.	Single. AA	A	B	C	Double. AA	A	B
25	6x 8 to 10x15	32.00	26.75	25.50	24.00	42.75	37.50	35.50
34	11x14 / 12x13 to 14x20	33.50	28.00	26.75	25.50	46.75	41.50	38.75
40	10x26 to 16x24	36.00	30.00	28.00	26.50	52.00	45.50	41.50
50	18x22 / 20x20 to 20x30	37.50	31.75	29.50	....	56.00	49.50	46.00
54	15x36 to 24x30	38.75	32.75	30.00	...	57.50	50.75	46.75
60	26x28 to 24x36	40.00	34.75	31.00	....	58.75	52.00	47.50
70	26x34 / 28x32 / 30x30 to 30x40	42.75	38.50	33.75	....	62.75	56.00	50.75
80	32x38 / 34x36 to 30x50	48.75	44.50	38.50	....	68 00	61.50	55.50
84	30x52 to 30x54	52.00	47.50	41.75	....	69.50	62.75	56.75
90			....	.. .	....	73.50	66.75	61.50
94		. ..	....	....	....	74.75	68.00	62.75
100		. ..	....	....	....	88.00	80.00	74.75
105		....	. ..	....	..	94.75	86.75	80.00
110		....	....	. .	....	105.50	97.50	90.75
115		....	....		....	118.75	108.00	101.50
120		...	....	....	....	140 00	126.75	120.00
125		....	....	....	....	153.50	140.25	133.50
130		....	....	....	. .	167.00	153.75	147.00

An additional 10 per cent. will be charged for all Glass more than 40 inches wide. All sizes over 52 inches in length, and not making more than 81 united inches, will be charged in the 84 united inches bracket. **All Glass 54 inches wide or wider, not making more than 116** united inches, will be charged in the 120 united inches bracket.

Discounts on car lots, from the above list, have been fixed at 90 per cent., and on 3000 box lots at 90 and 5 per cent. Until the new light list is printed, which will probably be within a week, discounts on less than car

lots will continue at 85 and 5 per cent. discount from the jobbers' list of September 1, 1900. This list appeared in *The Iron Age*, September 27, 1900, at which time it went into effect. These prices apply to all sizes, both single and double strength, and are for the entire country.

Cordage.—The Rope market is somewhat stronger, manufacturers quoting 7½ cents per pound for Sisal and 10 cents per pound for Manila Rope, on a basis of 7-16 inch and larger. Prices ¼ cent below quotations are, however, obtainable.

Paints and Colors.—*Leads.*—There is but a moderate demand for White Lead in Oil for immediate delivery. Grinders are reported as being busy on spring deliveries and anticipate an active demand. Prices remain unchanged as follows: In lots of 500 pounds and over, 6½ cents per pound; in lots of less than 500 pounds, 7 cents per pound.

Oils.—*Linseed Oil.*—The Linseed Oil market is in a more perplexing and unsatisfactory condition even than last week. Quotations of different crushers have a wide range, and at the lower figures it is difficult to obtain Oil. City Raw is quoted at 58 to 60 cents per gallon, and bids for five cars and over are turned down at these prices. Crushers are not willing to furnish more than 5 to 40 barrels at these figures. State and Western brands of Raw Oil are quoted at 58 to 65 cents, but it is difficult to obtain any quantity at the lower quotation. An independent factory was found last week which was willing to accept an order for five cars at 62 cents, but upon duplicating the order 65 cents was the best figure that could be obtained. For Boiled Oil of all brands 2 cents advance is asked. It is stated that 62 cents per gallon represents the cost of making Oil at the present price of seed. The tendency of the market is toward higher prices.

Spirits Turpentine.—There is an absence of inquiries for large lots of Turpentine, the demand being restricted to small lots, which is limited. Prices have fallen off during the week, and Turpentine at this point is now quoted at 40 cents for Southern and 40½ cents per gallon for machine made barrels.

Requests for Catalogues, Quotations, &c.

The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

THE DRENNAN-BRIGGS HARDWARE COMPANY, Syracuse, N. Y., have been incorporated, and will continue the wholesale business in Bar Iron, Steel, Metals, Belting and general Heavy Hardware formerly conducted by Thomas C. Drennan, 327 West Fayette street and 216 and 218 Walton street. The company would be pleased to receive catalogues, quotations, &c., from manufacturers.

Cawley & Cawley have just succeeded Stinson & Cawley in the Hardware business in Kendallville, Ind. They carry a general stock, comprising Hardware, Tinware, Stoves, Agricultural Implements, Buggies and Wagons, and will appreciate copies of catalogues, &c.

R. H. McAlpine, Amarillo, Texas, who was burned out November 26 last, and was fairly well insured, has opened up again. He expresses a desire for catalogues relating to Shelf Hardware, Stoves, &c., to take the place of those consumed in the fire.

C. A. TOBIAS, Hardware dealer, 1131 Ridge avenue, Philadephia, Pa., will put in a line of Machinists' Tools and Hardware Specialties, and desires catalogues, &c., relating to the same.

THE attention of the trade is invited to the advertisement signed "Active" among the Special Notices in this issue. In view of the experience and ability of the advertiser, who has been connected with the trade in the ways indicated for several years, the opportunity is deserving the attention of those who are seeking services such as are referred to in the announcement.

Trade Organizations.

East Tennessee Retail Hardware and Implement Dealers' Association.

The twelfth semiannual meeting of the East Tennessee Retail Hardware and Implement Dealers' Association was held at the Imperial Hotel, Knoxville, on Thursday and Friday, 17th and 18th inst. It was well attended, and three new members were added to the rolls. The following papers were read at the meeting: "How to Keep Old Stock from Accumulating, and How to Dispose of It," by John W. Bayless of Athens; "Would It Not Be More Pleasant and Profitable if Machine Companies Would Allow Agents to Hire Field Men?" by J. A. T. Bacon of Bristol; "Our Competitors, and How to Treat Them," by J. H. McCaslin, Sweetwater; "Drawbacks to Retail Trade, and How Best to Remedy Them," by J. A. Summers, Johnson City; "How Best to Introduce New Lines," by J. W. Bayless of Athens; "Twine Prospects for 1901," by R. H. McNutt of Maryville. The former officers, James May of Sweetwater, president, and W. A. Jones of Greeneville, secretary-treasurer, were re-elected.

Pacific Retail Hardware Dealers' Association.

The third annual convention of the Pacific Retail Hardware Dealers' Association was held in Woodland, Cal., on the 16th and 17th inst. About 80 members of the association were in attendance, together with a number of representatives of jobbing interests. The old officers were re-elected, as follows: John C. White, White, Cooley & Cutts, Marysville, president; Oscar C. Schulze, Eppinger & Co., Dixon, vice-president; William Earll, Hubbard, Earll & Co., Chico, treasurer; Robert W. Boyd, Hampton Hardware Company, Marysville, secretary; Geo. A. Legg, Legg & Schaw Company, Nevada City, and G. A. Gutman, Hochheimer & Co., Germantown, members of the Executive Committee. Next year's convention will be held in Nevada City on the third Wednesday of January.

Missouri Retail Stove and Hardware Dealers' Association

The following circular letter, which explains itself, has been sent to the Hardware dealers of the State by E. Thomas, Trenton, secretary of the Missouri Retail Stove and Hardware Dealers' Association:

I herewith inclose you a copy of the programme of the third annual meeting of the Missouri Retail Stove and Hardware Dealers' Association, and also send you, under separate cover, the proceedings of the last convention, held at St. Louis in February, 1900. Are you a member? If not you are standing in your own light. To make this movement a success it requires the united support of the retail dealers of the State. You are as much interested as any dealer, although you may think you are not. With a large membership we will be able to correct some of the various ills that are afflicting the retail trade. There has been an inter-State association formed, and, with its aid, important and beneficial results can be accomplished. Don't say "nothing can be done." Something can be done, but not without your aid.

Retail dealers' associations are being and have been formed in all our sister States, and flattering reports are being received from them. Don't be a drone. Lend your aid to a power that will be beneficial to you. The initiation fee is only $3, and I trust if you are not a member you will at once send that amount to the ndersigned and have your name enrolled, and on February 19, 1901, I will be pleased to meet you at the Coates House, in Kansas City, where we hold our next and third annual convention.

We have secured a rate of one and one-fifth fare on all railroads in the State, and when you buy your ticket, buy it for only one way and take certificate from station

agent, when you will be furnished with transportation on your return for the additional one-fifth fare.

Reduced rates have been secured at the Coates House and an interesting programme has been arranged.

Now do not delay in sending in your name to the secretary, as the Transportation Committee desire to know about how many will attend, and also the proprietors of the Coates House wish to prepare for the members who may attend. If you cannot be present send us your name, but we would much rather you would be at the meeting.

The programme of the meeting, February 19 to 21, has also been issued. The convention will be called to order on Tuesday, 19th, at ten o'clock, and the morning session will be devoted to the reading of the president's address and reports from the secretary-treasurer and Executive and Grievance committees. At the afternoon session Fred. H. Cozzens, secretary of the Interstate and Michigan Retail Hardware Dealers' Associations, will make an address on the subject, "How to Make the Association so Popular that It Will be an Inducement for All Retail Hardware Dealers to Become Members." Among the papers which will be read at the sessions on the 20th will be "The Benefits to be Derived from the State and Interstate Associations," by H. A. Cole, Council Bluffs, Iowa, president of the Iowa Retail Hardware Association, and "Benefits of Local Organization," by H. G. Koenig of St. Louis. At the session on Thursday, the 21st, Jas. A. Massey of the Massey Iron Company, Kansas City, will read a paper entitled "The Relation of the Retail Merchant to the Jobber." The Question Box will be a feature of the different sessions as heretofore.

Minnesota Retail Hardware Association.

The programme for the meeting of the Minnesota Retail Hardware Association, February 27 and 28, and March 1, is not yet ready, but Thomas McCracken, the secretary, whose address is Boston Block, Minneapolis, has issued the following circular, which tells something about the coming convention:

Our next annual convention will be held in Minneapolis, February 27, 28 and March 1, 1901.

A fare and a third will be granted on the certificate plan, if 100 certificates are presented (of which there is no doubt), you to pay full fare in and take a certificate from your local agent which will entitle you to a one-third fare on return. Some of the hotels have also granted reduction in rates to membership of the association.

Don't neglect to take certificates.

Neat gold badges will be furnished our members at the opening of the association.

We will forward you soon a programme of meeting, and trust there may be no reason why you cannot be present. Railroad tickets will be in force three days before and three days after close of convention, giving you in all nine days to spend in the Twin Cities.

We cordially invite every dealer in the State to be present. Many important questions will come up for consideration in which you are interested, and your voice is needed to help shape our course of action, and should not be withheld.

North Dakota Retail Hardware Association.

The annual convention of the North Dakota Retail Hardware Association will be held at Grand Forks on February 20 and 21. There will be three sessions on Wednesday, 20th, morning, afternoon and evening, and two sessions on Thursday, 21st, morning and afternoon. The first session will be devoted to routine business and the Question Box. As much of Wednesday afternoon's session as desirable will be devoted to the jobbers and manufacturers and their traveling salesmen for discussion of matters of mutual interest. At this session also papers will be read by Senator G. W. Wolbert of Casselton, on "Are We Boxers," and by H. S. Deisem of La Moure on "The Relationship and Effect of Department Stores Upon the Trade."

On the closing day papers will be presented on the following topics: "Credits," by M. G. Evenson of Sheldon; "Co-operation," by W. A. Fox of Ardoch; "Percentages," by H. L. Eastman of Wahpeton; "Store Character," by J. F. Jabery of Sanborn; "Advertising," by Chas. C. Vick of Hoople.

The secretary of this association is C. N. Barnes, Grand Forks, who will be pleased to respond to any inquiries for information concerning the organization and its approaching meeting.

Wisconsin Retail Hardware Association.

The annual meeting of the Wisconsin Hardware Association will be held next week, February 6 and 7, the scene of the convention being the Republican House, Milwaukee. The principal business of the meeting will be a discussion of the future work of the association and the desirability of loyalty to its claims. Combining the offices of secretary and treasurer in one individual will also be considered. Provision will also probably be made for the holding over of at least two members of the Executive Committee. C. A. Peck of Berlin, secretary of the association, advises us that his report will show a paid up membership of over 300, and, he adds, "there's more to follow." That the association is in splendid financial condition is indicated by the fact that there is between $600 and $700 in the treasury, with all debts fully paid.

Illinois Retail Hardware Dealers' Association.

The programme for the annual meeting of the Illinois Retail Hardware Dealers' Association, at Galesburg, February 19 and 20, is almost ready, and will shortly be sent to the Hardware merchants of that State. L. M. Reeves, Peoria, secretary of the organization, has mailed to the trade in Illinois a cordial invitation to be present at the meeting, and where the recipients are not yet members, to become affiliated with the association. To this letter the returns are reported coming in fast, which is regarded as a very encouraging sign and pointing to a large and representative gathering of Hardwaremen at the convention, as above.

Ohio Hardware Association.

All the indications point to a memorable meeting when the members of the Ohio Hardware Association come together in Cincinnati on February 26, 27 and 28. The merchants and manufacturers of that city are leaving nothing undone to make the stay of the visiting Hardwaremen enjoyable in the fullest degree. A large fund for the entertainment of the delegates has been collected, and it is not unlikely that the great Cleveland meeting of last year will be eclipsed. It will be remembered that that meeting was attended by about 400 of the representative merchants of the State. With a view to calling attention to the convention the Cincinnati Association has sent out a folder to every retail merchant in the State reminding him that "the best convention in the history of the Ohio Hardware Association will be held at Cincinnati the last three days of February." The hotels of the city also are issuing circulars in which information is given concerning rates, &c. The official programme of the meeting is not yet ready, but the gathering is sure to prove a rarely profitable one for all who participate in it.

WALTER B. STEVENS & SON, 114 Chambers street, New York, have recently been appointed selling agents for the Auger Bits and Boring Implements made by the New Haven Copper Company, Seymour, Conn. The latter concern make full lines of Auger and Car Bits, Nut Augers, Boring Machine and Millwright Augers, Black and Bright Lip Augers, Cooks' Augers, Car and Machine Bits and Auger Bits, and Russell Jennings' pattern Auger Bits. They will carry a stock of these Tools, both at their New York and Philadelphia offices, the latter being at 412 Commerce street.

ANDREWS WIRE & IRON WORKS, Rockford, Ill., manufacturers of Window Guards, Stall Guards, Office Railings, Elevator Inclosures, Wire Office Goods, &c., are sending out to their customers a handsome desk calendar mounted in an artistic metal frame. They state that on receipt of 7 cents, to cover the cost of mailing, they will be pleased to send extra copies while the supply lasts. The company have recently completed a new brick factory, which triples their former capacity.

Another View of the Catalogue House Question.

BY A WESTERN MERCHANT.

AT every meeting of retail Hardware dealers the one subject that is sure to come up (and usually it appears in many places) is the competition from department stores and mail order houses. To one who is conversant with the trade generally—that is to say, who knows the conditions as they actually exist, as well at Kalamazoo as at Seattle—the talk of the various people is very weak and futile. Not once in a season does a man speak who seems to know the first letter of the subject.

It is always taken for granted that the mail order house is simply an organized swindle, and the consumer needs only to have his eyes opened a trifle by the local dealer to discover this fact for himself. Much is made of the inferior goods that the catalogue house is said to handle exclusively, and men talk as if they not only knew this to be the truth, the whole truth, and nothing but the truth, but they take it for granted that everybody else knows it also—always excepting the poor, deluded consumer.

Catalogue House Competition.

If there is a way to fight the catalogue houses successfully I am confident that this is not the one that will do it. The physician who will cure most successfully is the one who is best in diagnosing a case. He that has not the ability to determine what and where the disease is ought never to be trusted with a patient.

In a like manner, when a man stands up in a trade convention to tell his brother tradesmen how to compete with catalogue houses, he ought to know just what that competition means, in quality of goods and prices, or else he is talking in ignorance and his advice is but empty words.

The Case of a Church Bell.

Take an instance like this: A jobber received a letter from a retailer in a small town in Michigan, saying that a new church was nearly ready for a bell; the trustees had written to two catalogue houses and were offered a bell of a certain weight for $75. The trustees had shown these offers to the local dealer, saying they would rather buy of him if he could do as well; he wanted the jobber to help him get the order. The jobber wrote to a bell maker and was quoted $67. This did not give margin enough to be divided by two men, and another letter was written the maker, telling all the story and begging for a lower price. The bell maker replied that he had given the jobber exactly the same figures that he had quoted the two catalogue houses, but added: "They sell direct to the church; do not have to divide with a local retailer, and apparently are satisfied with a small margin."

The average retailer will find a kernel of information in this incident. The three or four men quoting prices were all going to the same fountainhead for the bell, yet the song of the retailer to his customer is that catalogue houses handle nothing but inferior goods!

Quality of Goods Handled.

One would think that such a thing as seconds were never heard of until catalogue houses came into existence, and they were then manufactured that these houses could undersell regular trade. But the well posted man who goes through an ordinary stock of Hardware, either on the shelves of a retailer or a wholesaler, will find a good representation of seconds, though the retailer is very often not aware of this.

The writer was not long since shown through the Hardware department of one of the largest of the catalogue houses and was surprised at the clean stock of the very best makes. The retailer overlooks the fact that the catalogue house is not pushing new and unknown brands; that would be suicide. To offer Blank's 26-inch Hand Saw at $1 and claim it was the equal of any other Saw in the world would bring no trade. The consumer has no way of proving that statement. But if a well-known brand, that sells in every retail store at $1.25 or $1.50, is offered for $1 the consumer recognizes at a glance that he is offered a bargain.

Concerning Grass Hooks.

A manufacturer told me this bit of his experience: He makes a good line, running in price from $1 to $2.50 per dozen. In a certain city he called upon a jobber for his season's order. The buyer wanted only the cheapest Hook and gave an order for 100 dozen at $1, saying he must sell at $1.50, so they could be retailed at 20 to 25 cents. The manufacturer then called upon a catalogue house. The buyer there pushed the cheapest Hook aside, saying: "People are asking for better goods than that. We can get a fair price for a good article better than a low price for the poorest; let me have 100 dozen of your best Hook."

Grade of Rules Sold.

I stood before a stock of Rules in a jobbing house not long ago and one-third of the common numbers were seconds. An hour after I saw the stock of Rules of a catalogue house and every box on the shelves held first quality goods. Yet the retailer hopes to drive the catalogue houses out of business by shouting that only inferior goods are sent out by such houses. That will not do it, nor will it harm the catalogue houses.

A man who is just home from Alaska tells me that he bought 20 tons of material at the branch store of a catalogue house on the coast, after getting prices from jobbers and retailers there. He said he was given better prices and the goods handled by the catalogue house were brands that he knew to be reliable, while too many of those in the stores were unknown brands.

A traveling salesman said to-day that within a week he was in a large jobbing house where a new stock of Locks was just coming in and he was interested in the size of the bill, but a day or two later he was in a catalogue house which happened to be opening up its spring purchase of the same goods, and the bill was three times the size of the jobber's!

Here to Stay.

In my opinion the catalogue house has come to stay. It is not a new thing. It came into prominence 30 years ago and has been steadily growing more numerous and aggressive. The cheapening of postage, of expressage and of freight charges has helped this trade. The interest in advertisements has moved it along, and the growing confidence in getting good treatment from advertisers has given it a mighty push.

What the Retailer Can Do.

What can the retailer do to hold his home trade? He can do exactly what the catalogue houses are doing—persuade his neighborhood that he is giving them good value for their money. He must do something besides sit down and wait for them to come to him and pay any price he cares to ask.

The one thing needed in business to-day is brains. The man with brains is putting himself into close touch with his neighborhood by every form of advertising that will identify his name with his line of goods; but he is, above everything else, original and personal. He who copies some one else will hardly ever succeed.

A crude advertisement, full of personality and individuality, will bring more dollars than a smooth one that has so little snap to it that it is equally bad either in Maine or Montana.

Another thing. The Hardwareman is not going to hold the consumers from buying Hardware if he encourages them to send away for their groceries and dry goods. He must be in close touch with his fellow merchants, and almost as ready to keep grocery money at home as Hardware money.

Is this done? It is not. The grocer fancies he is currying favor with his customer if he helps him send away for a bill of Hardware, and *vice versa*, but both dealers are badly mistaken. The mail order habit is an infectious one, and one trial too often leads to another.

Let the retailers of the town work in the interest of

the whole trade of the town and the result would very soon be evident.

But no matter what all the dealers decide to do, the trade of the individual dealer depends very largely upon himself, and he should retain his hold upon every customer by absolute honesty of representation, fairness in price and genial good nature.

All the gods help such a man to success.

The British Hardware Trade in 1900.

FROM OUR SPECIAL REPRESENTATIVE.

THE year just closed will prove to have been a memorable one in the history of the British Hardware trade. From January to December it was full of startling situations. Manufacturers in all lines of light Hardware have been busy to an almost unprecedented extent; the home trades have kept their order books full, while foreign indents have been so many that in many instances the orders have had to be refused and have been placed in the United States or in Germany. But while the output of Hardware goods in 1900 was enormous, probably breaking all records, it is doubtful if the Hardware manufacturers have made such large profits as in 1898 and 1899. For while they have been subjected to an irregular metal market, they have also been subjected to increased competition in the neutral markets by America and Germany. Not only so, but American Hardware of one sort or another has been coming into Great Britain itself in increased quantities and enhanced popularity. So far as our imports of manufactured metal goods are concerned, the most prominent feature of 1900 has been the increased activity of American exporters and relatively the decreased activity of German exporters, although I imagine (writing without official data) the Germans have increased their exports of Hardware goods as well.

The Hardware Goods Great Britain Has Bought.

One of the lines sold over the counter of the British Hardwaremen is Brooms and Brushes. A considerable portion of the Painters' Brushes is sold by the British Hardwareman and he shares with the grocer and the oil and colorman the sale of Brooms. During 1900 we bought $1,300,000 worth of Brooms and Brushes. I surmise that about one-half of this quantity came from Germany, a much smaller quantity from the United States and a still smaller quantity from Canada. Two or three Canadian houses have been pushing their Brushes among London and Provincial salesmen and with some success. The amount of Cutlery brought from other countries is infinitesimal, amounting to $100,000, almost entirely from Germany. Our purchases from other countries of electrical goods and apparatus are increasing at a marked rate. During 1900 we bought over $6,000,000 worth of electrical goods. Here again Germany has done well. One or two of the German banks are heavily invested in factories that make electrical apparatus, both of a light and heavy character, and German firms have been well represented in this country. No statistics are available to show how much we bought from America, but by including telephonic and other electrical apparatus I think the amount can be put down at $1,250,000. In German electrical apparatus sold in Great Britain America has still much leeway to make up.

Great Britain's purchases in 1900 of Hardware, other than Cutlery, amounted to $4,500,000. Here, in contradistinction to the electrical goods, American exporters have scored heavily. Owing to the different nomenclatures adopted by the different countries what is Hardware in America is not Hardware in England. But, taking the main lines of American Hardware as being Builders' Hardware, such as Locks, Hinges, Saws and Hand Tools, in addition to light domestic Hardware, my calculation is that America exported to Great Britain $2,500,000 worth, an increase on 1899 of not much less than 25 per cent. This does not include Sewing Machines, of which we imported $1,500,000 worth, and I calculate that of this amount America exported $1,000,000. The only other item that may interest American exporters of metal goods is that of Tires and Axles (of which we bought a slightly increased quantity), and Cycles and parts thereof, our purchases of which declined from $1,400,000 to $950,000. From the foregoing figures it is quite evident that American exporters have improved their position in this country. And it is probable that if they can sell over here, they will be even more successful in the neutral markets of the world.

What Great Britain Has Sold.

Turning to the other side of the balance sheet, it is evident that British Hardware manufacturers have been unusually busy. Both Birmingham and Sheffield tell the same story. Sheffield has not only succeeded in keeping out foreign Hardware but it has increased its foreign trade, selling to foreign countries $3,250,000, an increase of $200,000 upon 1899 and of nearly $500,000 upon 1898. The United States bought more Cutlery from Sheffield in 1900 than for many years past, amounting in all to $425,000, an increase of $10,000 on 1899 and $95,000 upon 1898. Australasia continues to be Sheffield's best customer, buying no less than $800,000, a big increase upon recent years. The sales to other countries of light Hardware slightly declined, but amounted in all to $7,500,000, a decrease on 1899 of about $150,000. Of this amount the United States bought over $200,000 worth, an increase of about $17,500 on 1899 and an increase of $115,000 on 1898. This increase is very striking and not easily explained. Canada actually bought only $140,000 worth, considerably less than British light Hardware sold to America. But of the amount which nominally is sold to America it must be remembered that a certain quantity of English Hardware is shipped to Canada through American ports during the winter months. It is difficult to trace the exact proportion, and the same remark applies to Cutlery, but not to the same extent. The best customers of Great Britain for light Hardware are Russia, $280,000; Sweden and Norway, $290,000; Germany, $600,000; Holland, $500,000; Belgium, $400,000; the West Indies, $100,000; Brazil, $150,000; Argentine Republic, $180,000; South Africa, $600,000; British East Indies, $875,000; Australasia, $1,250,000. In Hardware and Cutlery Australasia has proved itself to be our best customer. Our sales of implements and tools amounted to $7,500,000. Other goods handled by Hardware stores in various parts of the world and bought from Great Britain are as follows:

Galvanized Sheets	$19,000,000
Tin Plates	20,000,000
Cast and Wrought Iron Goods	30,000,000
Plated Goods	2,800,000

In reviewing the export trade, a striking feature is that Great Britain is still selling the vast bulk of her manufactures to foreign countries, her colonies being of quite secondary consideration. The proportions of Hardware already cited indicate very much the state of our trade with the various European countries. A point for American exporters to consider is the continued hold which British goods have upon South American countries. Doubtless shipping facilities constitute the chief explanation for this. Certain it is that Mexico, Central America, Chili, Brazil, Uruguay and the Argentine Republic are still buying, and, if anything, in larger quantities from us.

The Home Trade.

It is always a matter of great difficulty to arrive at any satisfactory conclusion as to the actual extent of our home trade. We know with tolerable accuracy the exact volume of our foreign trade, but it is always necessary to remember that while under present conditions the foreign market is of the utmost necessity to Great Britain, yet our factories mainly rely upon the home trade for their continuance. There is no doubt, however, that during 1900 the purchasing capacity of the home consumer was enormously enhanced with high wages and regular employment. One of the first industries to benefit by improved labor conditions is that of the retail Hardwareman, and wholesale factors as well as manufacturers have been kept well supplied

with orders all through the year on home account. Buyers have asked for better quality than for many years past and there has been less rubbish thrown upon the British market during the last two or three years than for a decade before. The continued high price of Copper has led to a brisker demand for Brass goods and the Brass manufacturers of Birmingham and district have been kept well occupied all through the year. The increased demand for Copper of high conductivity for electrical purposes has tended in the direction of an increased use of Brass for Hardware goods. The Hardware manufacturers have started the year with a reduction of wages. The metal alliance, which on the whole has worked well, was threatened with dissolution, unless the workmen were prepared to accept a reduced bonus. Orders for Brass goods, chiefly for machine made goods for builders' and cabinet makers' use, and in improved art Brass work for decorative purposes and hearth furniture, have been a striking feature of the year. There has been a great trade in Brass Taps, Unions, Hydros, Electrical Light Fittings in brass, copper and hammered block iron, but the demand has grown less for Oil Lamps and Gas Pendants. The electro plate manufacturers have had a good year, both at home and abroad, Australasia in particular being a good customer. War Office orders came pouring in to many Midland and Sheffield manufacturers for all sorts of canteen goods, and these orders, carrying with them a good price, have added to the financial prosperity of the trades affected. But toward the end of the year the economic effects of the war began to be felt in the retail trade, with the result that orders grew less and less for Builders' Hardware, both in the light and heavy sections. The malleable iron founders of Scotland have suffered acutely from this cause and to such an extent that many of the foundries in the Larbert district have either closed down entirely or worked short time. As these War Office contracts have run to big figures and have all been urgent, it has necessarily followed that orders in the ordinary way of trade have had to go elsewhere; and German manufacturers have in many cases reaped material benefits. It is probable that when the balance sheet comes to be reckoned up, while War Office orders were quite acceptable they have tended to dislocate trade, diverting it oftentimes into the hands of British competitors, nor is it certain that markets thus lost will be easily regained.

Prices and Profits.

Although manufacturers and merchants have from time to time during the past 12 months raised their prices, these prices on the whole have not been commensurate with the increase in the price of raw material and the advance in wages. The fact that the merchants have no association in which they can discuss the state of the markets has left them at a great disadvantage, and more than once they have been hard hit by sudden rises in the price of metals and yet compelled to sell at quotations based upon lower estimated cost of production. In this instance both manufacturers and merchants are in the same boat. During the past few months the large Hardware merchants have been coming to some understanding as to the selling price of certain staple lines. I was repeatedly informed by large manufacturers and merchants that while they were not reaping prices proportionate to the increased cost of production they intended to do so when the price of metals came down. But the prices have come down so suddenly and, competition with America and Germany being so pressing, no opportunity has been afforded them of a gradual recoupment out of their customers for losses in the early part of the year caused by the increase and cost of raw material and imperative rises in wages.

The New Year.

On the whole the New Year opened with all the Hardware trades in a despondent mood. The continued resistance of the Boer Republics, while stimulating the demand for war materials, has seriously curtailed or dislocated the more ordinary business transactions. In addition to this large sums of money have been raised for charitable purposes in connection with the war, with the result that ready cash among the middle classes has gradually been growing less. The continued high price of coal has also had during the past few months a deadening influence, not only upon trade in the producing departments but upon domestic expenses —a very important item among the working classes. And had we had a spell of cold weather in November and December it is probable the present sense of depression would have come even earlier. But by March next prices and wages will have been readjusted in practically every department of the manufacturing Hardware trade and we shall then know more definitely what are the prospects for the new year.

Australian Letter.

The Australasian Tariff.

FROM A SPECIAL CORRESPONDENT

HAVING in view the importance of the Australian market as an outlet for American manufactures, and the absolute certainty of the yearly increasing demand for Hardware goods, no apology is necessary for again urging American manufacturers and merchants to closely watch Australian developments in the newly federated State.

Free Trade vs Protection.

Before specifying particular Hardware lines which will be affected, it will be well to note the existing danger in connection with the proposed tariff. The danger referred to is that the federation may be started with a fierce contest between the advocates of free trade and protection by the theoretical politicians of the different colonies, the two most important of which—viz., New South Wales and Victoria, represent almost the extremes of free trade and protection respectively. Under a free trade policy a land tax would almost certainly follow, while on the other hand a heavily protectionist policy would swamp all chances of revenue in this young country. A moderate protectionist policy of an all round 20 per cent. average will about fill the bill, and will, we hope, be finally adopted.

Effect on American Trade.

Now, how will this affect American Hardware? So far as we can see, and in the absence of any preferential tariff in favor of British made goods, American exporters, having their own home market at their back, will not be in any degree handicaped (as against British competition) by Australian duties. But the Protectionist Conference recently held in Sydney, whose draft scheme of duties recommended will undoubtedly carry weight, proposed, among other things, a 20 per cent. duty on iron. This proposal was foreshadowed by *The Iron Age* long ago, although it is difficult to see how a duty of 20 per cent. (with the usual 10 per cent. on invoice value added by the customs, thus making the duty practically 22 per cent.), can be of much assistance in developing native ores in a land like Australia, where the annual consumption is comparatively so very small, where labor and land carriage are so very dear and the methods employed are of necessity crude when compared with other countries.

Averaging American iron delivered in a Melbourne foundry at £6 per ton, a 22 per cent. duty would add £1 6s. 5d. to its cost, rather a heavy price for the man in the street to pay for the privilege of attempting to develop the unproved ore deposits of his country.

It is to be hoped this proposal will be rejected as not likely to benefit the aforesaid "man in the street," whose well being is supposed to be the first thing desirable.

American Nonchalance.

In the meantime it is curious to note that the Americans are not worrying themselves over this much "cut up" trade, although the advent of a pushing American traveler shook things up a bit a few years ago. He came, saw, conquered, introduced a few new brands, went away and was forgotten.

Barbed Wire and Wire Netting.

Turn to Barbed Wire and Wire Netting, and the outlook is somewhat different. The former is duty free in all colonies except Victoria, where there is a duty of £3 per ton, and where there are a few manufacturers doing a steady and profitable trade. The latter, Wire Netting, is duty free in all colonies, and a huge trade is done by Lysaght Bros. & Co., who have a large factory with all the latest improvements on the Parramatta River, near Sydney, and are starting, or are about to start, a similar factory in Melbourne. There has always been a large amount of American Barbed Wire on the market, although in the Wire Netting trade they have not done so well as they might. Black Wire Netting is not used—all Galvanized—averaging about 21 hundredweight to the mile.

The Protectionist Conference suggests a duty of 60 shillings (£3 per ton) presumably on both classes of manufacture, and one would not be altogether unwise in predicting the imposition of some such duty.

The trades are already established and proved, and the possibilities of development aided by duty are unquestionable, in which case American makers, if not absolutely shut out from the market, will have a "hard row to hoe."

Agricultural Implements.

Now take Agricultural Implements, where at present American makes are enjoying, if anything, more than their share of the trade. In Plows, Threshers, Winnowers, Harrows, Chaff Cutters, &c., the duty in Victoria is 15 per cent., about the same in South Australia; while New South Wales, Queensland and Westralia let them in free.

There are many established makers in these colonies turning out good work in similar style to the American makes, and kept always fairly busy on repairs.

The industry is already a national one, and the trade here is pretty sure to require and obtain an all round duty to "encourage local industry," and is perhaps in the best position of any trade to prove that a prohibitive duty on imported Implements will not have the effect of increasing the cost of their goods to the farmer.

Shutting Out Competition.

In the absence of any new arrangement of freight to counteract the duty it is difficult to see how the imposition of duties on these lines can fail to shut out competition from your country.

The Massey-Harris Company of Canada think sufficiently well of the market, I understand, to have arranged for the establishment of large works in New South Wales. They certainly have an immense business here. Are any American makers prepared to follow suit ?

Australia as a Manufacturing Country

It is not the province of *The Iron Age* to discuss the political outlook of Australia, but it is well to warn manufacturers that a strong attempt will be made to make this country a manufacturing one, in which case all existing business relations will undergo a transformation, and fresh methods of trade winning will have to be adopted. Forewarned is forearmed, and the few instances given above will serve to illustrate the possible developments in store.

American Competition.

And just here it is well to remark the undoubted fact that when the Australian manufacturer begins to talk about foreign competition it is not the time honored story of British or Continental competition, with their reputed excessively long hours of labor and low scale of wages which he complains of. That bogey seems to have lost its terrors, and America, with its rigid, scientific system of manufacture, its elaborate machinery designed to reduce the wages bill to a minimum, and its protective tariff acting as a bonus on export, is now regarded as the country most to be feared.

Add to this the rapidly increasing means of transit between your country and this, and one can readily understand the fears of the Australian manufacturer and his desire for tariff protection.

Railway Development.

Railway development is proceeding rapidly in Australia, in each of the colonies, and will be one of the most noticeable features in connection with the progress of the country within the next few years. Your manufacturers would do well to instruct their London agents to keep in touch with the Australian agents general in that city in order to secure early information regarding contracts to be called for in such lines as Rails and Locomotives, besides the hundred and one accessories of a railway branch, such as Boiler Plates, Axles, Tires, Buffer Springs, Pressure Gauges and so on *ad infinitum*. Tenders of the above nature are almost weekly requirements. An Australian agent is, of course, preferable to a London one.

A Cotton Waste Contract.

One hundred and eighty-four tons of white cotton waste in quarterly deliveries of 23 tons are required for South Australian Railway Department. Tenders close February 26, 1901.

An Australian Present to Colonel Roosevelt.

The recently elected Vice-President of the United States is shortly to receive a gift of a Saddle, built on the Australian model (except for the stirrups). The saddle has been made to the order of A. J. Sage, a Melbourne gentleman holding several American agencies, and a friend of the Colonel's, and will be forwarded per first ship to Boston. It is made of specially selected materials, with Colonel Roosevelt's monogram on the fore part of the skirt, and with the Southern Cross embossed on the sweat flaps.

Business of 1900.

Everything points to the further expansion of Australian commerce, and no reaction or halt is likely, except from the influence of the markets of the Old World. Yet, despite the high prices ruling during 1900, especially the earlier part, it is not expected that profits will be very much greater when the balance in trading concerns is completed, the advance in prices in some departments having fallen off several months ago. Still the business of the year has been satisfactory, although the crops have been somewhat late and money has in consequence come in slowly. But the price of wheat in the home market is keeping firm, freights have fallen somewhat and the harvest has been a full one. The new century bids fair to open full of promise for Australia's future.

Shipping Developments.

Your traders have no doubt noted the new three-weekly service of steamers from San Francisco to Sydney, due to the enterprise of J. D. Spreckels. This gentleman, it is said, has a grant from the United States Government of £50,000 per annum as a mail subsidy in connection with this service, and it is reported that he is about to visit Australia with a view to getting additions to the subsidy from the Government on this side of the water. No one can blame him for this, or have any feeling but admiration for his enterprise, but there is a certain amount of feeling displayed in connection with the terms on which the American subsidy is granted. The steamers must be built and owned in the States, and the whole business must be American throughout. Mr. Spreckels can hardly expect these colonies to subsidize the protected industries of America in this manner. New Zealand has declined to do more than pay a poundage rate on letters, and Australia will certainly not do more.

The new mail service is admittedly welcome, but the sentiment would be stronger if both American and Australian interests were represented in the service. The whole success of the enterprise cannot lie at one end of the line alone—Australia develops the trade equally with America—and the stringent conditions laid down in connection with the American subsidy are not calculated to make us more sympathetic with your country.

Sentiment is a strong factor in trade; other things being equal one's friend gets the business, and the State should not encourage enterprise with one hand while checking it with the other.

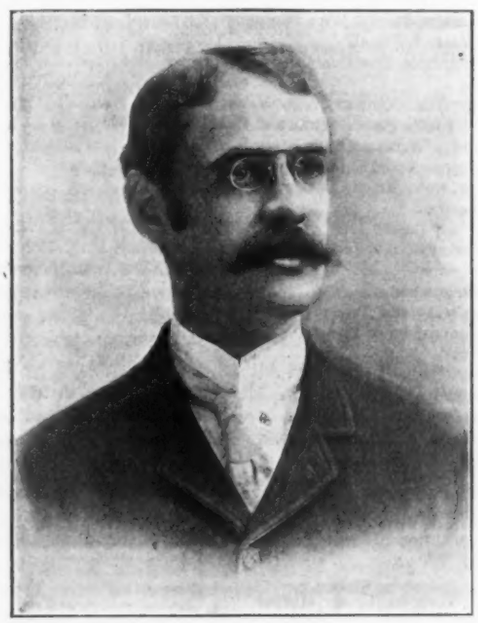
Death of William D. Supplee.

WILLIAM D. SUPPLEE, treasurer of the Supplee Hardware Company, died at his home in the suburbs of Philadelphia, January 24, after an illness of only a few days. The funeral services were held at his late residence January 28.

William Danforth Supplee was born in La Crosse, Wis., in 1862. He came to Philadelphia with his parents when quite a lad. He was educated at Rugby Academy and the University of Pennsylvania. After finishing his education at the latter institution he entered the service of Lloyd, Supplee & Walton, who were succeeded by the Lloyd & Supplee Hardware Company, who in turn were organized into the Supplee Hardware Company.

He began his business life as office boy in the employ of Lloyd, Supplee & Walton, advancing by stages through the various positions necessary to qualify himself for the important post of treasurer, which place he held from the organization of the present company until the time of his death.

He was the only son of William W. Supplee, president of the Supplee Hardware Company, who was for four



WILLIAM D. SUPPLEE.

years president of the National Hardware Association of the United States, and one of its organizers.

William D. Supplee was a member of the Union League and Hardware Merchants and Manufacturers' Association of Philadelphia, the Historical Society of Pennsylvania and several minor organizations.

He was taken ill on Sunday, January 20, with what was thought to be only a severe cold, but which rapidly developed into a case of acute pleurisy and from that by quick stages into pleuro-pneumonia. It was hoped that his unusually strong constitution and previous exemplary habits of life would carry him safely through, but all hopes proved vain and he passed away on the evening of the 24th inst., leaving a widow and two children. In his death a career of exceptional success and promise was cut short, and a sincere sorrow brought home to a host of friends, by whom he was held in high and affectionate regard on account of his many admirable qualities and his sterling character and worth.

At a special and largely attended meeting of the Hardware Merchants and Manufacturers' Association of Philadelphia the following resolutions of sympathy and appreciation were adopted:

Resolved, That, as we are called together by the sad news of the death of our friend and fellow member, William D. Supplee, we cannot refrain, even in these inadequate words, from expressing in some measure our grief and sorrow in the great loss which has befallen the community, his family and ourselves.

It is now our mournful privilege to state in what high esteem we regarded him in all the varied walks of life, whether in the social or business world. Genial and cordial in manner, bright and cheery in all the vicissitudes of life, he was a manly man, a faithful and loyal friend, who spoke of all in charity and kindness, and his name will ever be associated with the many gracious qualities by which he endeared himself to all.

In business his numerous friends bear testimony to his upright and truthful character, his frankness and unfailing courtesy and his intense devotion to business interests and duties. By faithfulness and perseverance he fitted himself to be his father's stay and help, and our association has suffered a severe loss, though the name of William D. Supplee descends unsullied to his sons, and will ever be fragrant in our memories.

Our hearts go out in loving sympathy to the widow and sons who mourn a devoted husband and father, to the mother and sisters who are called upon to bear this great sorrow, and lastly to the father, so well known to all of us and who is now required to face this crushing grief.

As the ways of Divine Wisdom are inscrutable and past finding out, we can only defer in trustful faith to the God of all comfort and trust His consolation may rest upon all who mourn so deeply and in whose sorrow we feel we have a share.

Correspondence.

What Does C. I. F. Mean?

To the Editor: Referring to what is said by your English correspondent under the above heading, it would seem as if there was something omitted, otherwise the decision of the arbitrators antagonizes experience and the law of stoppage in transit. Nor is "A Manchester Merchant" correct, in saying that a C. I. F. transaction resolves itself into a sale of documents.

The documents of themselves are of no value, they are only the instruments for evidence of value in transit. If such documents were resolvable into the article sold then delivery would be complete when the documents were placed in the mail at the shipper's post office, and in the event of an act of bankruptcy or insolvency of the buyer, while the goods were in transit, there could be no stoppage, as now, by a letter or telegram to the carrier at the place of destination.

"Cost, Insurance, Freight," are explicit terms. Unaccompanied by any reservations, they carry the sold value to the place of destination, but do not include landing or local charges. Being explicit "Cost, Insurance, Freight," without reservation, the chain of cost from the place of shipment to the place of destination is complete, and unless the shipper was merely the agent of the buyer, and the words "Cost, Insurance, Freight," meant only quotations from an agent to a principal, the responsibility for increases in freight or insurance in transit could not be imposed upon the buyer.

JOHN LIVINGSTONE.

MONTREAL, January 25, 1901.

Atlas Tack Company's Catalogue.

THE ATLAS TACK COMPANY, Taunton, Mass., have just issued an illustrated catalogue of their goods. This business was established in 1810, and in the six different factories of the company they manufacture several thousand different kinds, styles and sizes of Tacks, Nails, &c., only a few of the principal sizes of the most important lines being illustrated in this book of 115 pages. They call attention to the fact that all products that are made of iron can be furnished bright, blued, polished, coppered, brassed, silvered, nickeled, japanned or in any color desired. They are also prepared to furnish all styles of Tacks and small Nails, Rivets and Burrs in brass and copper, their goods being packed in any style and shape as desired. Owing to the great increase of their export trade and the numerous demands from abroad this catalogue has been printed in four languages: English, Spanish, French and German. This company are also large manufacturers of Eyelets, Steel Shoe Shanks, Heel and Toe Plates, Glaziers' Points, Staples, Belt Rings, Basket Clamps and Hooks and other goods of this description.

Catalogues, Price-Lists, &c.

CHICAGO SPRING BUTT COMPANY, Chicago, Ill.: Catalogue of Spring Hinges and Hardware Specialties. This catalogue contains illustrations and price-lists of Double Acting and Single Acting Spring Butts and Blank Butts, Double Acting and Single Acting Triple End Spring Butts, Spring Floor Hinges, Spring Lavoratory Door Hinges, Spring Saloon Door Hinges, Spring Engine House Hinges, Engine House Latches and Catches, Door Springs, Door Plates, Door Hangers, &c. A telegraph code is inserted to facilitate the ordering of Hinges by wire.

GLASSCOCK BROS. MFG. COMPANY, Muncie, Ind.: Circular describing their combined Baby Jumper and Rocking Chair.

CLEVELAND STAMPING & TOOL COMPANY, Cleveland, Ohio: Revised price-list of Lava Enameled Ware and Solid Steel Polished and Tinned Goods, Hotel Ware, &c. Also a circular devoted to the Burr Steel Safety Lift, automatic and adjustable.

E. C. ATKINS & Co., Indianapolis, Ind.: 1901 catalogue devoted to their line of Saws and Saw Mill Machinery or Specialties, of particular interest to lumber and mill men. The book of 173 pages also contains a treatise on the care of Saws, which will be of value to sawyers and filers.

BLUFFTON MFG. COMPANY, Bluffton, Ind.: Catalogue No. 20, devoted to their American Rotary, Round, Square and Open Washing Machines, Clothes Bars, Wringers, &c.

MCCRAY REFRIGERATOR & COLD STORAGE COMPANY, Kendallville, Ind.: Catalogues of the McCray patent system of Family Refrigerators, Cooling Rooms and Cold Storage buildings.

F. E. MYERS & BRO., Ashland, Ohio: Circulars describing the Ashland Folding Lawn Swing, Myers' Patent Gate Hanger, Myers' Cushion Tire Store Ladder and Myers' Stayon Flexible Door Hanger.

I. E. PALMER, Middletown, N. Y., Hammocks and Hammock Accessories: A 1901 catalogue illustrates, with list prices, Hammocks in many varieties and styles.

FARWELL, OZMUN, KIRK & Co., St. Paul, Minn.: Bicycle Sundries. A catalogue of over 75 pages is devoted to illustrations and prices of Bicycle Sundries.

SMITH & HEMENWAY COMPANY, 296 Broadway, New York, are issuing the third edition of what they term the "Green Book of Hardware Specialties." This catalogue contains the full line of Nippers and Pliers made by the Utica Drop Forge & Tool Company, and a great variety of special goods. They are also sending out a little memorandum book, 5½ x 2⅝ inches in dimensions, in the form of a diary, five lines being assigned to each day of the year.

BUCHER & GIBBS PLOW COMPANY, Canton, Ohio: Large folder devoted to Plows, Harrows, Cultivators, Beet Diggers, Land Rollers, &c.

THE AMERICAN APPRAISAL COMPANY, Matthews Building, Milwaukee, Wis., have issued two interesting documents. The larger of the two contains a great number of testimonials from manufacturers and other business men who have been clients of the company in securing appraisals of buildings, machinery and fixtures comprising their property. It is stated that many of these clients have saved in insurance premiums more than the cost of the appraisal. The second document is a pamphlet which contains an inquiry sent out without the knowledge of the company by the W. J. Clark Company of Salem, Ohio, manufacturers of Metal Specialties, to many concerns who were reported to have employed the services of the company in making appraisals. They received a reply from every one to whom the inquiry was addressed, and the replies were all favorable. The result of the inquiry was so satisfactory that the W. J. Clark Company furnished the letters to the American Appraisal Company for this publication.

CONTENTS.

"The Hardware Merchants of My Younger Days."

An address before the New England Iron and Hardware Association Boston, January 24, 1901.

BY JAMES NICHOLS FRYE.

Mr. President and Gentlemen:

Our good president, intending, no doubt, to compliment me because of my many years and whitened hair, has requested me to say a few words to you this evening concerning the "Hardware Merchants of My Younger Days—Their Manners, Customs and Business Methods."

Quite unconsciously, perhaps, he has relegated me by this request to the remote past—to a past lying beyond the middle of the last century—and by implication has assigned me to a place among the "back numbers" of the trade, as a sort of connecting link between the days that are gone and those that now are with us.

Personally, I forgive our president for this thoughtlessness on his part, but he has yet to make his peace with you, who—unless you flee from this hall before I shall have closed my remarks—must suffer the consequences of his rashness. I feel, indeed, how keenly apprehensive you must be. This is the first occasion on which you have had me fully wound up, and none among you can be certain of the time that may elapse before I run down.

But I have not been altogether unmindful of your welfare, or of the fact that suburban trains are lacking after midnight, for I have made arrangements with our president, who should be a good barometer for testing the effect of my talk, that whenever it may appear that I am pushing you too severely he shall tug vigorously (even viciously, if need be) at my coat, and at this signal it is agreed that I shall subside.

In his invitation to me for this occasion our president assured me of a seat near the head of the table, and then went on to state that the event was to assume the aspect of a "love feast." What the latter term might imply I did not fully understand, nor do I now. As usually defined, a love feast should be a "religious repast," but such repasts have surely been infrequent in the Hardware trade—at least, of late years. Perhaps, however, patient waiting and close watching may bring me due enlightenment on this point, and I therefore shall waive my perplexity for the present. I am willing to trust to our president for a full explanation of the term, feeling sure that it will be satisfactory in every way. And in any event, I have carried out my part of the contract: for I am here "in my seat at the head of the table," and the second part of our president's proposition awaits his own demonstration.

And now I beg to assure you that the fact of my being the senior member of the Hardware trade in Boston does not embarrass me so much as the very material fact that I am in doubt as to my ability to enable you to profit by my observations of men and things during the half century and more that has passed since I entered business life. As you well know, there are few orators in our own peculiar line of trade and I am not numbered among the few. But if you will bear with me for a short half hour I will preach to you, as simply as may be, from the text already announced, "The Hardware Merchants of My Younger Days—Their Manners, Customs and Business Methods."

I approach the task reverently and yet with reluctance, for I do not feel myself worthy of it, nor can I consider myself capable of doing justice to the old time merchants of Boston, who were your predecessors and mine. Their own lives and their own records are their best memorials, and I shall attempt nothing beyond recalling some of the traits and characteristics which, years ago, impressed themselves most deeply upon my observation.

I deem it not unlikely that our president, in assigning me my topic for the evening, has had in mind a double purpose. It may be that he desires not only to have me submit for your consideration the men and methods of the past, but also wishes me to hold them up for comparison with the men and methods of the present. If this be so I must disappoint him in so far as concerns the latter point. I shall speak of the merchants of the past, it is true, and of their business customs; but it is for you, gentlemen, to make your own comparisons.

And now, if you will pardon me for this long preamble, I shall at last attack my subject. Looking back over the many years that have passed since, as a mere youth, I first came to this city of Boston I find that my memory is clear and my impressions of early events are still sharply defined. To me the old time merchants of the Boston Hardware trade seem yet to exist. It is true, if I may take liberties with an old verse, that—

"Their bones are dust;
Their wares are rust—
Their souls are with
The saints, we trust."

And yet their good name and fair repute should be more enduring than the metals in which they once dealt.

As I recall them they were almost without exception men of mental strength, men of cool, clear judgment, men sincere in their business ideals, jealous of their integrity and honor and ever observant of the etiquette of mercantile life. As a class, their personal lives as well as their business careers stood alike as worthy examples for the imitation of the younger generation which received its training at their hands. In a word, they were Boston business men and Boston gentlemen of the typical old school.

From 1816 and onward, to about 1850, the leading wholesale Hardware merchants of Boston, as I now recall them, were:

Homes & Homer,	Wm. Greenough,
W. & G. Tuckerman,	Chas. Scudder & Co.,
Fairbanks & Burdick,	Proctor & Palmer,
Montgomery Newell.	

With the last named—and 52 years ago—I began my mercantile career, remaining with him until his death, about six years after I had entered his employ. His store at that time was situated at 83 State street.

Mr. Newell had established himself in the Hardware trade in 1816, and so had been in business for nearly 35 years when first I came to him. And to-day—you must pardon me for saying this with a touch of pride—the business which he thus established still goes on and is drawing toward the completion of its first century of continuous existence. For, under four different styles of firm and in association with eight different partners, of whom no less than five have passed away, I have brought into this twentieth century the business founded by Mr. Newell in the early days of the nineteenth. The present firm of Frye, Phipps & Co., who already have continued under this style and title for upward of 37 years, may surely lay claim to an honest business ancestry.

From Mr. Newell I received my first mercantile training and early business impressions. His ideals regarding mercantile honor, courtesy and etiquette were of the very highest. He ever sought to impress upon the minds of his young men and clerks the paramount importance of these characteristics. Never, by example or precept, did he permit the impression to be formed that trickery, deceit or what some tolerantly term "shrewdness" could be countenanced by any person in his employ.

It was his desire that his clerks should be gentlemen, and he required them to be courteous, both in their intercourse with customers and among themselves. His own deportment was a constant object lesson in this respect. In his dealings with his competitors in business he was uniformly courteous and considerate, and in the years during which I was associated with him in business—as well as in those following his death—I never heard aught said against him.

Mr. Newell did not die a millionaire, but, for his time, he left an ample competence. Better still, he left a name for integrity and courtesy which ever will be pleasantly remembered, and he enjoyed to the full the admiration, respect and esteem of his contemporaries. He was sincere and straightforward in his speech, manly in his conduct and uncompromisingly opposed to wrong in any of its guises. I never knew him to utter an oath, to make a scurrilous remark, or to offer an unworthy insinuation

concerning any one. He made no pretense to the possession of qualities finer than those of other men. His code of conduct, both in private and business life, was that of the Golden Rule. His religion, I think, might have been summed up in its few and simple words, "Do unto others even as you would have others do unto you." The modern version, "Do others, lest they do you," would have been utterly beyond his comprehension.

With him, 100 cents made a dollar, 16 ounces made a pound and 36 inches made a yard. He detested untruthfulness, deceit and sham, and would no more permit, imply or condone a wrong than he personally would commit one. With him literally, "A good name was rather to be desired than great riches."

You must pardon me if I refer so frequently and so fully to my impression of Mr. Newell, but you will remember that under his tutorship I took my first course in my business education, and you will understand, I think, my admiration for the class of which he was a worthy type. And, as a class, his contemporaries were much like him. It was the good old custom for business men in the same line of trade to drop in casually on one another, for the discussion of matters of interest, and for the interchange of courtesies, and I know by personal observation that the characteristics of Mr. Newell were also those of his friends and neighbors in the Hardware trade.

And now, if I may, I shall illustrate by an anecdote or two the spirit which ruled the conduct of business affairs when the last century was yet young. Mr. Newell's store, as I have said, was located at 83 State street; at 87, a short distance beyond, was that of Proctor & Palmer, of which Deacon Proctor was senior partner. This firm were either the largest or well to the front among those then in the trade. In those days there existed an understanding in the trade that a customer "belonged," so to speak, to any firm so long as he voluntarily continued to do business with them. Any attempt to entice away or to sell goods to such a customer, on the part of another firm, was held to be unmercantile and dishonorable, and Mr. Newell, though the rule gradually became a dead letter, held unswervingly to it.

At that time it was customary for the country merchants to visit the city, spring and fall, for the purpose of replenishing their stocks. I then was living at the City Hotel, on Brattle street, long since demolished, but possibly still remembered by some of you. It was a popular resort for merchants from the section of New England from which I had come to Boston. Returning one day to the store, after dining at the hotel, I was accompanied by a merchant from Vermont, with whom I had been acquainted in my boyhood days, who chanced also to be a customer of Deacon Proctor's. We paused in front of 83 State street to finish a bit of conversation and were seen by Mr. Newell, who happened to be at the front of the store.

"Mr. Frye," said he, when I entered, "I saw you just now in conversation with one of Deacon Proctor's customers."

"Yes, sir," said I. "He was Mr. Blank, from the vicinity of my home, and I was chatting with him on neighborhood affairs."

"I hope you did not ask him to come to our store to buy goods," said Mr. Newell. I replied in the negative, and then, wishing to impress on me the necessity for observing the rule of which I have spoken, he went on: "I don't say to you that it would be as dishonorable for you to ask one of Deacon Proctor's customers into this store and sell him goods as it would be for you to go into Deacon Proctor's store and take from his till as much money as you would make on the sale of the goods; but it would wrong Deacon Proctor just as deeply."

I think that this anecdote has been told at a meeting of your National Association, just how correctly I do not know, but I recall telling it to T. James Fernley, secretary of the National Association, and under the following circumstances:

Mr. Fernley had called to ask me if I intended going to the meeting of the association at Pittsburgh in 1899, and, on my replying that I could not, had said that he hoped to be able to make some arrangement or devise some scheme by which the Hardware dealer could secure a better profit. "But," he added, "we must have some old merchant like you to tell us how to accomplish it." And it was then that I told him this anecdote of Mr. Newell, closing with this remark: "Let every one stop this infernal lying, cheating and deception and treat his neighbor as he himself would be treated and then profits may be made as they once legitimately were made."

Does this seem like a brutal outbreak? Perhaps. But let me ask you, gentlemen, in all earnestness, whether or not it strikes anywhere nearly at the root of one of the causes handicapping trade to-day. I sincerely believe that a more general observance of the precepts of the Golden Rule would bring instant relief from an unfortunate condition which now oppresses the dealer and the manufacturer, the buyer and seller, and I most firmly believe that conditions cannot permanently be bettered otherwise. Bear in mind, please, that I do not pose as an example of that which I advocate. I simply make the statement that trade conditions as now existing are both unfortunate and unworthy of our traditions; and this statement, together with the remedy here suggested, I submit for your conscientious consideration.

It may, perhaps, be asked how the scrupulous observance of the rule to which I have just referred would permit a merchant to enlarge his circle of trade. The answer should be obvious, the growth of his business should depend upon his personal reputation for fair dealing and attention to the best interests of his customers. In the older days retailers from the same neighborhood were in the habit of coming together and conferring on the merits of the wholesale houses with which they had dealings. Can it be doubted for a moment that the recital by one of them of a story of considerate treatment was without a marked effect on his hearers? Should it be doubted that this would hold true to-day as well as in the past?

It always has seemed to me that the carrying on of business with a view to the mere gaining of money was an unworthy career for a merchant to propose for himself. Why should the formation of character and the establishment of reputation not have their value in business as well as in professional life? Is not the creation of an honored name, which shall endure among men after the desire or need for wealth has passed away, a worthy ideal for the merchant to set before himself? And, in even a lower point of view, is not a well established mercantile reputation a most satisfactory form of capital? Can its place ever be taken by money?

But to return to Montgomery Newell, and the incidents of other days: Mr. Newell's store on State street, opposite Merchant's row, was owned by those famous old Boston merchants, Amos and Abbot Lawrence. Its annual rental was then $1000; to-day it would rent for over ten times that amount. One day in the latter part of November, 1850, Amos Lawrence, a gentleman of fine presence and great dignity, came to the store and said to my employer: "I think your lease expires on the last of December, does it not, Mr. Newell?"

"I think it does, sir," replied Mr. Newell, who also was a large and portly man, of most dignified presence.

"Do you wish to retain the rental of the store?" inquired Mr. Lawrence.

"I have been here many years, and should be pleased to remain," said Mr. Newell.

"Values are advancing somewhat on State street," said Mr. Lawrence, "and we shall be obliged to increase your rent."

"And what will the rent be, sir?" asked Mr. Newell. "Twelve hundred dollars," replied Mr. Lawrence; whereupon Mr. Newell, bringing his fist down upon the mahogany counter top (mahogany was as cheap then as hemlock now is) and making the contents of the counter drawers jingle merrily under the blow, thundered out, "Extortion, extortion!" And on the expiration of his lease he promptly moved out from the place of business where he so long had been established.

In the first year of my service with Mr. Newell he presented me, as was his custom with all of his young men, with a paid membership in the "Mercantile Library Association." I mention this to show that he took more

than a passing interest in the welfare of those connected with him. At the close of my first year's service, as I well remember, I said to him: "My year ends to-day, sir; do you wish my services further?" He said that he did, and I thereupon asked what my compensation was to be. He stated the sum, and then added, "I think you have a balance due on last year's salary." I replied that I believed $50 was still due me. "Would you like the money or my note?" said he. I asked for his note, and he made out and handed to me his note for $125—$75 more than was my due. As well as I could, for I was but a country lad fresh from Vermont, I thanked him.

Year by year, without request on my part, he fixed my salary at an advance, until at the end of the fifth year he assisted me to become a member of the firm, with whom I now have been connected for upward of 47 years as a partner. To his kindness and consideration I attribute whatever of success I have attained during this long business life of mine, and as I draw near the hour when retirement confronts me, I wish reverently to make this acknowledgment of my obligation to my employer, partner and friend of the olden time.

Fifty-two years are, indeed, many years, but I shall not weary you with any summary of the material changes that they have brought. When first I came to it, the city of Boston had but a scant 125,000 of the half-million people which it now boasts, but its reputation for mercantile honor and sagacity stood then, as it stands now, with the highest.

And on what does that reputation rest? Not on the towering mercantile buildings, the strongly guarded banks, the crowded warehouses, which we see around us, for then they were not in existence.

No; rather let it be said that the reputation of Boston was built upon the solid foundation afforded by the honor and integrity of its solid men of business, men solid morally as well as financially, men who would sacrifice fortune rather than principle. The glory of Boston lies in the names of men like Lawrence, Beebe, Norcross, Hale, Safford, Converse, Lincoln, Brooks, Greenough, or Bradford—names synonymous with business honor and private purity of life. And the type of men I have endeavored to sketch in my hasty portrait of Montgomery Newell was the type of scores on scores of the Boston business men of the olden time—may it continue to be the type for the Boston of to-day and of the morrow!

But I forget that I am here as a connecting link. In dwelling on the past, I am neglecting the condition of the present. May I, at the risk of speaking perhaps too frankly, refer to certain conditions with which we all are familiar?

Competition, that wonderful growth of modern times, confronts us not only as an incentive to earnest and honest endeavor, but also, I fear, as a temptation to practices lying far without the old time code of business morality. It seems to me, as I look down from the vantage point of my many years, that men whom we politely term "shrewd," or, to be more frank, men whose selfishness at times leads them to employ deception, spoken or implied, are far too conspicuous a factor in present trade conditions. In other words, what once was healthy competition is threatened with degeneracy into a feverish struggle, in which sharp practice may be "winked at," if not condoned. We all know that unscrupulous men may fix prices and terms which almost compel men of honest purpose to stoop, in pure self defense, to methods which in former times would have grated harshly upon their consciences. And let me say that the evil is not confined to the Hardware trade. We see it on every hand about us, from the fixing of the price for armor plate for our battle ships to the packing of a barrel of apples.

I repeat that in my early days this was not so. There was far *more confidence* among business men than now is manifest. Complaints of one neighbor against another for transgressing the terms of an agreement were then unknown. The lion and the lamb could then lie down together in peace, with no fear on the part of the lion lest the lamb should bite him.

Those were golden and happy days in the Hardware trade. Competition was held within reasonable limits; expense accounts were small, when viewed from our modern standpoint; profits were comparatively satisfactory, and, best of all, the practice of deceit was almost unknown. The merchant's customers came down from the country and visited him in his own office, selecting their purchases under his immediate advice. There then was no *Iron Age*, no manufacturers' price-lists, no weekly typewritten letters on prices current. Every customer within 50 miles of Boston did not then have a telephone with which to call every dealer in Boston to obtain the lowest prices on each one of a list of 20 different small articles, finally to divide this little lot of orders among the lowest bidders.

Truly, the changes of the half century have been many and marvelous, but they are brought home most plainly to the veteran Hardwareman by an increase in the balance on the credit side of the profit and loss account. Or still more emphatically, perhaps, by the ever growing magnitude of the expense account—which, though we must have it, most certainly "comes high."

But there is another phase of the competition question to which I must refer very briefly. There can be no doubt that it has led to an ever growing production and sale of cheap goods—and here I use the word "cheap" in its double sense. I was educated by a merchant who religiously believed that the *best* was the cheapest, and I have yet to be convinced that the cheapening of quality with a view to the lowering of price is good commercial policy—leaving out of consideration its purely moral aspect. When myself buying goods, my invariable rule was to *recognize a good article*, and *then* buy it as cheaply as possible. As a salesman it was far more satisfactory to me that a customer would say, "Your price was high, but the article was a good one" rather than "Your price was low, but the goods were worthless."

A representative of a leading manufacturing firm of Connecticut, from whom during many years I had bought many goods, once said to me: "Mr. Frye, you are not fit to buy goods. Why? Because when an article is shown to you, you examine it in every particular, and then—without regard to its price—say it is not right in this respect, or in that particular, for the purpose for which it is intended."

I must admit the strength of his criticism, for what he said was absolutely true—and yet if I were buying to-day I should not alter my former methods. It pains me to observe a tendency on the part of younger Hardwaremen to purchase a poor article, say at a cost of 60 cents, simply and solely because of the thought that it may be made to take the place of a good article of the same general kind, which costs (and is honestly worth) a dollar. What if it does not answer the requirements of the purchaser? It is bought to sell again—let the consumer look out for himself. The experience of many years has satisfied me that this method of procedure is unsatisfactory alike to buyer, seller and consumer. As a salesman, it was my endeavor to sell the best goods, both in the interest of my employer, my customer, and myself. I then held that "cheap goods make cheap men" and the lapse of over 50 years has not altered that conviction.

Time inevitably has wrought changes in our business methods, and in many ways for the better. I must confess to skepticism, however, on the innovation under which it now is our custom to determine the cost price of our goods. In earlier years, as everybody knows, the stocks of our Hardware stores were made up from foreign importations in the main, the bulk of the goods coming from English manufacturers. It was the custom of merchants in those days, after reducing to our currency values the cost in sterling money, to add importation charges—"freight and charges," so called—and in addition to that, one year's interest at 6 per cent. The amount thus determined was considered the "base cost" of the goods, and selling prices were computed accordingly. Have we bettered this system under the conditions now prevailing?

At the risk of being rated as an old fogy, and doubly a back number, I venture to say that we have not. We now exhaust every device of ingenuity and skill in obtaining goods at the lowest limit of price, and then make

this figure our base on which to compute our selling percentage. Were we to add to our invoice prices the freight and other charges, and make the amount thus determined the base price on which to compute our selling figures, I can assure you that our profit and loss accounts at the end of the year would show marked changes for the better. Let us stop, gentlemen, and consider what we are doing. We are selling our goods at less than half the profit of 50 years ago, while our expense accounts are five or six times larger than they then were. This method of computing base prices is surely a *modern one*, but is it one of which a reasoning man should boast as an improvement?

And now, after a moment of moralizing I shall give way to others whose words may have more of interest for you than these reflections of mine concerning a half forgotten past. I do not believe that all that is good is to be sought for in the past, for I know too much of the work that is being done in the present, and I have too much confidence in what the future has in store. To return to former methods and conditions, even if we would, is an impossibility—hence it devolves upon us to devise, if we may, better measures and methods. Of one thing I am sure: As Hardwaremen we should develop *greater confidence* in each other—as New England Hardwaremen we should strive to reanimate the old neighborly spirit of mutual dependence and good will. We may take at least one leaf from the story of the past in the Hardware trade of Boston—the leaf on which is written the rule that courtesy and good faith between competitors form no bar to the successful conduct of business. If we revive and live up to this ancient precept, I think I may assure you that much of the petty jealousy which to-day mars our relations in trade will disappear forever.

The old times were good old times, it is true; but the new times in which we find ourselves are not lightly to be regarded. If you will bear with me I wish to read you a homely little verse which tells its own story:

It may be, folks, the old times wuz the best times, spring and fall;
But, thank the Lord, we're living in the new times, after all!
Bright skies above, and hearts to love, and earth, and sky, and sea,
As beautiful and beaming as the Lord will have 'em be!
I favor all the old times—I like 'em, ev'ry one—
Each sweet, old-fashioned floweret, kissed by the dew and sun;
The mem'ry of 'em from the heart will never pass away—
But, thank the Lord, we're living in the bright new times to-day!

Yes, we are living in the bright, new times—and the future is promising. Progress has not reached its limit, it is to extend in every direction. There never before in our national history was a greater need than now for men of ability, honor and integrity, or a wider scope for their talents. One thousand-dollar men, $5000-men, $10,000-men—men of ability at almost any price—are needed to-day to do the work of the world. The opportunity for men of every class was never better nor more promising.

And in this bright new century, we, as Hardwaremen, must ask ourselves whether as merchants of modern times we are sustaining the reputation for sagacity, integrity and honor handed down to us by our predecessors; whether our lives, our methods, manners and customs are in keeping with the traditions which have made this city of Boston what it is? Are we setting for the young men in our employ the example that was set for us by the honest and worthy old merchants whom we have succeeded? Are we training our clerks to be good citizens, and in time to be respected merchants of Boston, when we shall have relaxed our grasp on affairs?

I trust that in the future we may meet more often as we are meeting now—in a social way—where by looking each other squarely in the face we may promote a better acquaintance. Let us begin here and now to speak straightforwardly, each to the other; to question no longer the saying that each neighbor's word is as his bond. I am the senior of you all, and I ask you gently to bear with me in what well may be my parting admonition. I have been in and out among you during nearly all your business lives—we surely are not strangers to each other—and I strongly feel that the time has come, that conditions are ripe, for a revival of the era of good feeling in our trade which marked the dealings of Hardwareman with Hardwareman in the him past of 50 years ago.

And now I shall release you from further attention, with my most sincere appreciation of the forbearance which you have shown in thus following my wandering remarks. It is good to have been with you as the years have gone by—it is good to have been with you to-night—and I wish to thank you for this crowning act among your many courtesies.

Simeon L. & Geo. H. Rogers Company.

THE SIMEON L. AND GEORGE H. ROGERS COMPANY, Hartford, Conn., have succeeded the Rogers Bros. Mfg. Company of that city and Wallingford, Conn., and are manufacturing Sterling Silver and Electro Silver Plated Ware. The officers of the company are John MacFayden, president; Samuel MacFayden, treasurer; George H. Rogers, secretary. The Messrs. MacFayden were for nearly 20 years connected with William Rogers Mfg. Company, and S. L. Rogers and G. H. Rogers are sons of the late Simeon S. Rogers, one of the three original Rogers brothers. G. M. Hallenbeck, well known in the trade, is a director and manager of the Wallingford factory, and it is understood that William H. Watrous of Hartford, late with the International Silver Company, is also interested in the concern. Mr. Watrous has been a manufacturer of Rogers' Silverware for the past 30 years, beginning in 1870 as the Rogers Cutlery Company. In 1879 he consolidated with the Wm. Rogers Mfg. Company, of which he acted as manager until January 1, 1901. The blanks will be made in their factory at Wallingford, Conn., and the finishing and shipping will be done at Hartford. The new company have just issued a folder illustrating their line of Nickel Silver and Silver Metal goods, and they expect to have a catalogue within a few weeks.

Ludlow-Saylor Wire Company.

SEVERAL months since we referred at length to the large and important improvements made by the Ludlow-Saylor Wire Company, St. Louis, Mo., manufacturers of Wire Cloth, Wire Work, Ornamental Metal Work, Railings, Wrought Iron Fences, &c. Their most recent improvement is a building, 175 x 75 feet, three stories and finished basement, with auxiliary buildings, and devoted to the manufacture of Wire Cloth, from Fly Screen to the heaviest mining grades. The company allude specially to the regularity of mesh and the strength of the Perfect Double Crimped Cloth made by them. They advise us that mining companies who use it are convinced of its superior qualities, in view of its durability and its retaining the opening so essential for the screening of ores. Their new Wire Cloth list, Catalogue No. 31, just issued, gives in its 68 pages all the general information required. This catalogue will be sent and prices quoted on application. The business of this company was established by R. C. Ludlow in 1856, and was incorporated in 1875. At a meeting of the stockholders of the company on the 23d inst. the capital was increased from $100,000 to $400,000.

Calendars.

E. C. ATKINS & CO., Indianapolis, Ind., manufacturers of Saws and Saw Tools.

ROLLMAN MFG. COMPANY, Mount Joy, Pa., manufacturers of Potato Cutters, Peach Stoners, Cherry Seeders, &c.

FARWELL, OZMUN, KIRK & Co., St. Paul, Minn., jobbers of Hardware, &c.

BINDLEY HARDWARE COMPANY, Pittsburgh, Pa., jobbers of Hardware, &c.

JOHN W. S. PIERSON & Co., Stanton, Mich., dealers in Hardware, Farming Tools, Wagons, &c.

SAMUEL EVERETT, Lytton, Ohio, dealer in Hardware and Farm Machinery.

Charles M. Gish is successor to Gish Bros., Hardware and Stove merchants, Waldron, Mich.

Spencer Wire Company.

SPENCER WIRE COMPANY, Worcester, Mass., have added a Buckle department to their works, having purchased the business of E. W. Jewett & Son, Swanton, Vt. They will retain the services of the Messrs. Jewett's foreman, and he will act as superintendent of the new department. They will also have the benefit of E. W. Jewett's services in starting in this line of manufacture. With improved facilities of every nature, including the manufacture of their own Wire, a splendid location. a new factory and ample capital and business experience, the company expect to serve the interests of the trade in this line better than ever before. The company advise us that their Wire business is very good at the present time, the plant running continuously from Monday morning until 12 o'clock Saturday night.

Connecticut Saddlery & Bell Company.

THE CONNECTICUT SADDLERY & BELL COMPANY have been organized at Meriden, Conn., and will manufacture Saddlery Hardware, Dog Collars and Sleigh Bells. The firm consist of W. E. Pepper, who has been identified with the Saddlery Hardware business for the past 18 years, and the members of the firm of Port & Frank, for the past ten years dealers in Metals, whose experience in this line is referred to as of value in making Saddlery Hardware. The company have purchased a fine factory in Meriden, and are now in position to take orders. They will issue a catalogue relating to their line in a week or two.

Acetylene Generation.

AN interesting booklet with the above title has been issued by F. Cortez Wilson & Co., 239 and 241 Lake street, Chicago, who are manufacturers of the Acetogen for generating acetylene gas. The method of generating gas by this apparatus is plainly described, without the technicalities which confuse the layman unfamiliar with gas making processes. The Acetogen generates gas by introducing the carbide to the water, and the claims for the superiority of this method are fully and quite convincingly set forth. The little book is daintily gotten up with wide margins which are used for the purpose of presenting ancient types of illuminating devices. Illustrations are presented of the Acetogen and its method of construction and operation.

Interstate Foundry Company.

ATTENTION is called to the advertisement of the Interstate Foundry Company, Cleveland, Ohio, a recently organized concern, of which Thos. H. Gartland is general manager. The new plant is being pushed to completion. We are advised that it will be one of the largest foundries in the country. Mr. Gartland is known to the trade as a practical foundryman, having had 25 years' experience in the manufacture of light gray iron castings. In 1893 he organized the Gartland Foundry Company of Cleveland. The temporary office of the Interstate Company is located in the Cuyahoga Building.

Trade Items.

MILLER, SEARS & WALLING is the name of a new concern established at 20 Reade street, New York. This firm will carry on a wholesale business in General Hardware, Agricultural Implements and Railroad and Mill Supplies, in connection with the retail trade in New York, New Jersey, Connecticut, Pennsylvania and other nearby territory. They will carry a stock of certain lines for quick delivery, including Cutlery, Revolvers and some specialties, for which they have adequate storage room on the premises. They are also exclusive agents for a number of manufacturers. Wm. S. Miller, senior member of the concern, was for several years with the Sickels & Nutting Company, New York, as was also Burroughs B. Walling, the junior partner. Seymour N. Sears, the other member of the firm, was formerly with the Consolidated Gas Company.

BRAUER BROS., St. Louis, makers of Leather Sporting Goods, specialties and Brauer's Ankle Support, have removed to larger and better equipped quarters at 405-409 North Nineteenth street. They report an unusual amount of business for this time of the year and state that sales during 1900 were 40 per cent. greater than for the previous year.

ROBERT E. LOCKWOOD, 460 Produce Exchange, New York, was elected to membership in the Hardware Club at a recent meeting of the Board of Governors.

THE ST. JOSEPH PUMP & MFG. COMPANY, E. A. King president, St. Joseph, Mo., have issued a handsome booklet entitled "New St. Joseph Souvenir." The pamphlet consists of 40 pages, all but three of which are profusely illustrated with views of parks, prominent buildings, residences and manufacturing establishments. Reference is made to the material advantages St. Joseph enjoys, not the least interesting being the water works and its sand filtering plant. The pumping capacity of the works is four times present requirements.. While the population of St. Joseph in 1890 was 52,324, the census of 1900 places it at 102,979.

IN giving a list of the Pocket Cutlery manufacturers of the country in a recent issue we referred to the Foster Bros. & Chatillon Company, Fulton, N. Y., as established in 1899. While it is true that this company were organized about a year ago, the business which they are conducting was established in 1880 in Phœnix, N. Y., and was originally known as the Central City Knife Company. It subsequently became the Phœnix Knife Company, and the present owners acquired control of the business about six years ago. Last year they moved the plant to Fulton, enlarged it considerably, and incorporated the business under its present name.

UNDERHILL, CLINCH & CO., 94-96 Chambers street, New York, who have the agency of the Geneva Tool Company, Geneva, Ohio, manufacturers of Geneva Steel Goods, call our attention to the fact that they carry in stock what they believe to be the largest and best assortment of hand Agricultural Tools in this city. The line includes all kinds of Hoes, Rakes and Forks for almost every known use, representing as it does the growth of a business established 55 years ago. Underhill, Clinch & Co. have just completed a fine sample display of the various types of goods in their new sample room. In this connection the company announce that they have in preparation a catalogue soon to be issued, illustrating and describing the entire line, which they believe will be the best catalogue of its kind representing this industry.

JOHN H. GRAHAM & CO., 113 Chambers street, New York, will hereafter act as general agents for the sale of all goods manufactured by the Snell Mfg. Company, Fiskdale, Mass. They will receive all orders and make all quotations. Goods will be billed by the company through John H. Graham & Co., to whom all remittances will be made. The unremitting efforts of the representatives of the company will be continued to maintain the high standard of excellence of these goods.

Miscellaneous Notes.

Grand Crossing Tack Company.

The Grand Crossing Tack Company, Grand Crossing, Chicago, Ill., are now making smooth galvanized wire of all gauges, as well as plain annealed and bright market wire. Their galvanizing plant has just been completed. The company roll their own rods, draw their own wire, and manufacture wire nails, tacks and rivets. N. D. Platt, 91 Lake street, Chicago, is sales agent for their wire and wire rods.

Vaughan & Bushnell Mfg. Company.

The Vaughan & Bushnell Mfg. Company, 875 to 887 Carroll avenue, Chicago, have added Button's pattern pliers, post hole diggers and machinists' ball peen hammers to their products. The pliers are made in two grades, branded V. & B. and Garden City. The V. & B. pliers are drop forged from tool steel, while the Garden City are of a good quality and claimed to be equal in

every respect to any low priced plier. Both styles are made in four sizes. The post hole diggers have steel blades and are well made. The machinists' hammers are not pressed in shape, but are drop forged from crucible bar steel, carefully hardened and drawn.

Bay State Tap & Die Company.

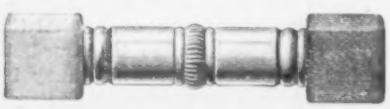
The Bay State Tap & Die Company, Taunton, Mass., have organized under the laws of Massachusetts for the manufacture of a full line of taps and dies. Machinery is being installed and, we are advised, the company will be ready to furnish the smaller sizes about March 1. W. C. Batchelder, who has had long experience in the tap and die business, has been engaged as superintendent.

Bathroom Specialties, Match Safes and Hooks.

Searls Mfg. Company, 27 Mulberry street, Newark, N. J., for whom Frederick Klages, 127 Duane street, New York, is sole agent, have recently put on the market a number of attractive new goods in the way of bathroom fixtures. One of the new lines includes tumbler and tooth brush holders and soap dishes in single and combination form. A number of these are fitted with china soap dishes and tooth brush vases, with a receptacle for holding a tumbler. These goods are made of solid brass and nickel plated. There is also a new line of brass and nickel plated match stands designed to hold both safety and parlor matches, either for large or small safety match boxes. These goods are made in square and circular form of spun metal, and while of a substantial character can be sold at very moderate prices. Some of the stands are also made with loaded bottoms. Another line, more particularly for the hardware trade, includes a series of polished brass hat and coat hooks, in single, double and triple hook styles, the latter having a long center hook suitable for holding a silk hat.

Dixon's Novelty Eraser.

Joseph Dixon Crucible Company, Jersey City, N. J., are offering the ink and pencil eraser shown herewith. The two rubbers are connected by a nickel plated me-

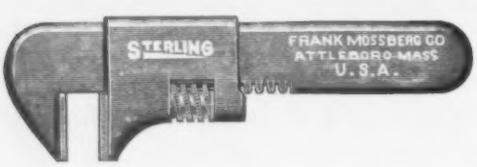


Dixon's Novelty Eraser.

tallic cylinder, the length over all being 2⅛ inches. The eraser is referred to as being of a size convenient for the desk or pocket, and its shape as being adapted to erasing fine lines. It is remarked that its erasive qualities for both ink and pencil marks recommend it for the use of bookkeepers and business men.

Sterling Bicycle and Machinists' Wrench.

Frank Mossberg Company, Attleboro, Mass., have recently put on the market the Sterling wrench for machinists's use and bicycle purposes. This wrench, with the exception of the screw, is made entirely by means of press work. It is 5 inches long, weighs 4¼ ounces, will take a 1¼-inch nut, is case hardened and nickel



Sterling Bicycle and Machinists' Wrench.

plated, or can be furnished case hardened without nickel finish if desired. It can be used for cone adjustment on the closest bicycle frames, we are advised. It is referred to by the manufacturers as the strongest light wrench made, the material, workmanship and finish being of high grade and warranted.

The Solitaire Hammocks.

I. E. Palmer, Middletown, Conn., has added to his line of hammocks the ones shown in the accompanying cuts. The hammock illustrated in Fig. 1 is referred to as being first class, all trimmings being appropriately finished and assembled in a workmanlike manner. It has double

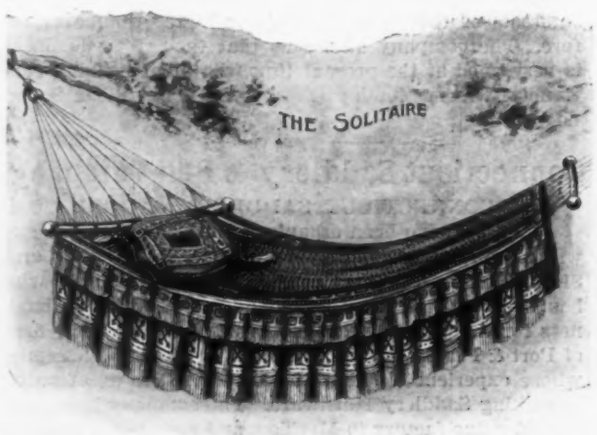


Fig. 1.—Solitaire Hammock No. 7⅛ 4 D. V.

draped valance and ornamented wood spreaders. In the near future, it is stated, the Solitaire will be made in other sizes, and of more costly materials. The hammock shown in Fig. 2 has a pillow neatly tacked with upholstery buttons, and has attached at each lower corner ornamented pompons and tassels. The pillow is fastened to the hammock at the upper edge only, so that it can be laid back when desired. The spreaders at the head and foot consist of two half rounds highly finished, fastened together with ornamented screws, rings and knobs. The double valance consists of a wide valance, over which is draped a narrow valance. The extensive line of hammocks made by this concern has been enlarged this year by many new features and a variety of entirely new patterns and colorings. Mr. Palmer is at this time starting a spinning plant in con-

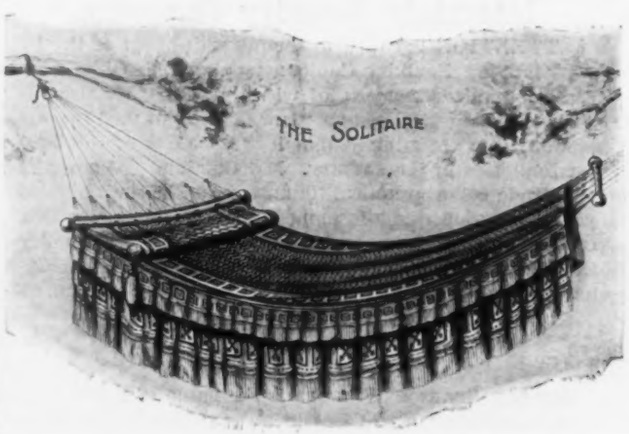
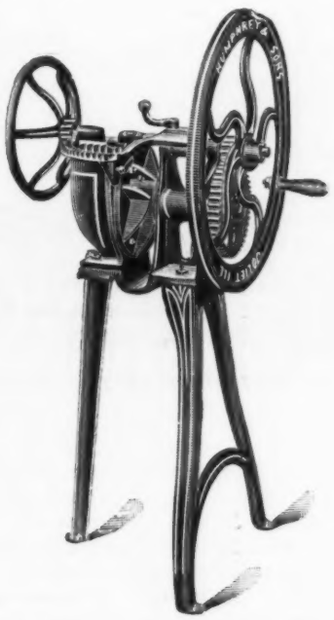


Fig. 2.—Solitaire Hammock No. 4 D V.

nection with his mill to spin his own yarns, and can now make hammocks from the bale of raw cotton to the finished product. This feature is believed to be peculiar to this mill. Special machinery is employed to give a linen finish to hammocks, which finish is referred to as adding strength, lessening wear and tear, strengthening and setting the colors and laying the fiber and giving the hammock better shape. Eight medals have been awarded the products of this mill, among them a silver medal and diploma at the Paris Exposition of 1900, which is referred to as the highest award possible in this class.

The Humphrey Green Bone and Vegetable Cutter.

Herewith illustrated is the Humphrey green bone and vegetable cutter, offered by Humphrey & Sons, Joliet, Ill. The cutter consists practically of three parts: a hopper, which holds the bone to be cut; a cutting head or knife, with its attachments for turning, and a wing working on a pivot to hold the bone in position for cutting. The hopper is an open bowl tapering from top to bottom, and closed on one side by the revolving head



The Humphrey Green Bone and Vegetable Cutter

carrying the cutting knives, and on the other by the pivoted wing. The cutting head consists of a disk 9 inches in diameter, with four slots radiating at right angles from a common center, with heavy braces in the back to insure strength, and with recesses in the face, in which the knives are placed even with the surface of the plate. The power is supplied by the double leverage secured by having the turning handle at the outer edge or rim of a large fly wheel, the axle of which is a small cog wheel which engages with a larger wheel to which the cutting knives are attached, thus securing great force with small expenditure of energy. The cutting knives are four in number, and have at the edges a series of corrugations that are stamped into the steel at such distances from the center that the projection of one knife covers the indenture of the preceding one. These wave like edges, it is shown, not only cause the knife to cut more easily but also produce a curled bone cutting, easily picked to bits by the youngest chick. The corrugations are also formed in radiating lines from the center, to eliminate all possible friction in the cutter head. The head is so arranged, it is explained, as to give the largest possible cutting contact, 9 inches of knife being in constant action. A special advantage in the arrangement of the cutting head, it is pointed out, is that it allows all the gristle to slip through and out of the way. It is stated that the gristle contains no nutrition, is of no value as food, and in the cutter it falls out without bother to the operator. The pivoted wings provide a means of holding the material to the cutter head. It is pivoted top and bottom close to the cutter head, and, by means of a hand wheel and a small pinion working in the rack on the extreme upper edge of the bowl, is brought up to the cutter head with the left hand while the right hand turns the power wheel on the right side of the machine. As soon as the material in the hopper is exhausted, the wing is brought back to its former position by reversing the action of the hand wheel attached thereon. The cutter is made in four sizes, No. 1 being hand power, No. 2 semi-power, No. 3 power, and No. 4 geared power. The machine is primarily a green bone cutter, for chicken food, but it can also be utilized for cutting vegetables, doing its work, it is stated, perfectly, rapidly and easily. The company have issued an artistic catalogue, which, besides a description and illustrations of their cutter, contains a treatise on the raising of poultry, testimonials of those who have used the machine and blank pages ruled for keeping a poultry account every month of the year. They have also published a companion pamphlet on the subject of "Feeding for Eggs."

Warren's Catalogue and Stationery Cabinet.

The Cabinet shown in the accompanying cut was made to order for the office of one of the leading hardware journals, to provide suitable places for catalogues and stationery, and a few drawers for electrotypes, which can be used equally as well for large sheets of paper, blank contract and insurance forms, &c. The original design has been slightly changed to especially suit the demands of the average hardware store, and is, it is remarked, giving satisfaction to all using it. It is made in two designs, one the same as illustrated and the other having railing at the top to hold large catalogues. The former is known to the trade as No. 1804, and the latter as No. 1805. It is made of antique oak, mounted with solid brass pulls and card frames for numbers or names, with a sliding shelf in the center to rest catalogues on when referring to them. The cabinet is 4 feet 6 inches

Warren's Catalogue and Stationery Cabinet.

high, 2 feet 5 inches wide, 1 foot 3 inches deep and containing 12 drawers, 12 inches wide, 14 inches long, 3 inches high; five drawers, 24 inches wide, 14 inches long, 4 inches high, and three drawers, 24 inches wide, 14 inches long, 1¾ inches high. Descriptive matter relating to the cabinet may be obtained of the manufacturers, J. D. Warren Mfg. Company, Chicago, Ill.

The Standard Butter Cutter.

The Cleveland Galvanizing Works, Cleveland, Ohio, are offering the butter cutter shown in the accompanying cuts. The machine is substantially constructed of malleable iron and steel throughout, galvanized to prevent rust, and consists of the base, the frame and the

Fig 1.—The Standard Butter Cutter

swing. The base is shown with the frame in position on the posts in Fig. 2 and the swing in Fig. 3. In operation the frame is removed from the base and the frame is swung over one of the posts, as shown in Fig. 1. A tub of butter is overturned squarely and evenly on the board of the frame, and the tub and the paper removed. With a slow, steady movement the swing is pulled toward the operator to allow the wires to cut the butter into three slices. The swing is then removed and the frame placed on the posts, as in Fig. 1, and the wires are pushed down through the butter. The frame is raised until the wires are clear, the board and butter is given

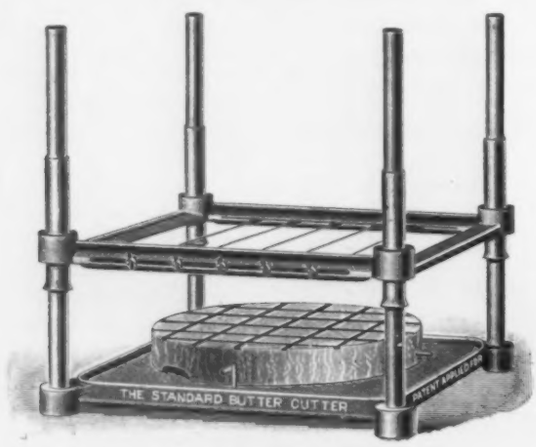


Fig. 2.—Base and Frame.

a quarter turn, which can be determined by means of stops in the board and base, and the frame is pressed down a second time. This completes the operation of cutting the butter into bricks. The wires can be adjusted, it is explained, to cut ½, 1 or 2 pound bricks as desired, by means of a gauge which adjusts the wires to the correct weight automatically The imperfect bricks on the outer edges may be packed in a mold furnished with the machine, which, when full, is overturned on the board, and two cuts are made with the frame to produce 16 bricks. The machine is designed for the use of commission men, creameries, grocers and retailers. It is stated that with the machine a tub of butter can be cut into 1 or 2 pound bricks, accurately,

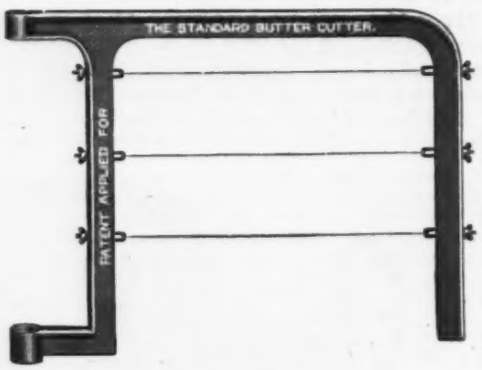


Fig. 3.—The Swing.

subsequent weighing being unnecessary, in about 30 seconds after the tub is placed on the machine.

New Departure Bicycle Bells.

New Departure Bell Company, Bristol, Conn., John H. Graham & Co., 113 Chambers street, New York, selling agents, have just put on the market musical chime bells for bicycle use as here illustrated two-thirds size. This particular bell is made both in cam electric and double stroke styles, in 2½ and 3-inch diameters. There are two gongs giving two different tones which are referred to as both pleasing and effective. A feature of this style of bell is the form of lever for ringing it.

Musical Chime Bells, two Gongs.

They also make the Broncko rotary electric alarm bell to be fastened above the handle bar. This bell has one gong and a lever of similar character to be pulled by the finger. This is made in 3-inch size and is intended to give a loud, distinct ring, particularly for use in city streets, where noise prevents smaller bells from being heard.

Drop Forged Tack Claws

J. H. Williams & Co., Brooklyn, N. Y., are manufacturing the tack claw shown herewith. The claws are drop

Drop Forged Steel Tack Claws.

forged, steel tempered and warranted. They are carefully wrapped and packed in boxes containing one dozen.

Current Hardware Prices.

REVISED JANUARY 29, 1900.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer, are printed in *Italics*, and the prices named represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. They apply to such quantities of goods as are usually purchased by retail merchants. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33⅓@33⅓&10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

Cut Prices.—*In the present condition of the market there is a good deal of cutting of prices by the jobbing trade, whose quotations are often lower than those of the manufacturers.*

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE INDEX SUPPLEMENT (May 3, 1900), which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters Blind—

Domestic, ₩ doz. $3.00...33⅓@33⅓&10%
North's....10%
Zimmerman's—See *Fasteners, Blind.*

Window Stop—

Ives' Patent....25&5%
Taplin's Perfection....50%

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anvils—American—

Eagle Anvils....₩ ℔ 7¼@7¾¢
Hay-Budden, Wrought....9@9¼¢
Horseshoe brand, Wrought....9¼@9¾¢
Samson....₩ ℔ 7¼@8¢
Trenton, Wrought....₩ ℔ 8¼@8¾¢

Imported—

Armitage's Mouse Hole....8¾@9¼¢
Peter Wright's....9¼@9¾¢

Anvil, Vise and Drill—

Millers Falls Co., $18.00....20%

Apple Parers—See *Parers, Apple, &c.*

Aprons, Blacksmiths'—

Hull & Hoyt Co.:
Lots of 1 doz....25%
Smal er Lots....20%
Lots of 3 doz....30%

Augers and Bits—

Com. Double Spur....70@70&5%
Boring Machine Augers....60&10&10@70&5%
Car Bits, 12-in. twist....60@60&10%
Jennings' Pattern:
Auger Bits....50&10&5@60%
Ford's Auger and Car Bits....40&10@40&10&10%
Forstner Pat. Auger Bits....25%
C. E. Jennings & Co.:
No. 10 ext. lip. E. Jennings 'list....40%
No. 30. E. Jennings' List....50%
Russell Jennings'....35&10&5%
L'Hommedieu Car Bits 15&10@15&10&5%
Pugh's Black....20%
Pugh's Jennings' Pattern....35%
Snell's Auger Bits....60%
Snell's Bell Hangers' Bits....50%
Snell's Car Bits, 12-in. twist....60%
Wright's Jennings Bits (R. Jennings' list)....50%

Bit Stock Drills—

Standard List....65&5@70%

Expansive Bits—

Clark's small, $18; large, $26....50&10%
Lavigne's Clark's Pattern, No. 1, ₩ doz., $26; No. 2, $18....50&10%
C. E. Jennings & Co., Steer's Pat....33⅓%
Swan's....60%

Gimlet Bits—

Common Double Cut..gro. $2.00@2.75
German Pattern....gro. $3.35@5.00
Double Cut, makers' lists....50&5@50&10%

Hollow Augers—

Ames....25&10%
Bonney's Adjustable, ₩ doz....$15.50
New Patent....25&10%
Universal....20%

Ship Augers and Bits—

Ford's....40%
Snell's....40%
C. E. Jennings & Co.:
L'Hommedieu's....15&10%
Watrous'....40%

Awl Hafts, See *Hafts, Awl.*

Awls—

Brad Awls:
Handled....gro. $2.75@3.10
Unhandled, Shouldered gro. 63@66c
Unhandled, Patent....gro. 66@70c
Peg Awls:
Unhandled, Patent....gro. 31@34c
Unhandled, Shouldered gro. 65@70c
Scratch Awls:
Handled, Common..gro. $3.50@4.00
Handled, Socket..gro. $11.50@12.00

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—

First Quality, best brands $6.25@6.50
First Quality, other brands $6.00@6.25
Jobbers' Special Brands:
Good Quality....$5.00@5.50
Best Quality....$6.25
Cheap, Handled Axes....$5.50@5.75
Beveled, add 25c doz.

Axle Grease—See *Grease, Axle.*

Axles—*Iron or Steel.*

Concord, Loose Collar....4½c
Concord, Solid Collar....5 c
No. 1 Common....3@3¼c
No. 1½ Com. New Style....3½@4 c
No. 2, Solid Collar....3½@3¾c
Nos. 7, 8, 11 to 14....75&10%
Nos. 15 to 18....60&10&10%
Nos. 19 to 22....80%
5% cash 10 days.

Boxes, Axle—

Common and Concord, not turned.. lb. 5c
Common and Concord, turned..lb. 6c
Half Patent....lb. 9c

Balances—Sash—

Caldwell new list....50%
Pullman's....60%

Spring—

Spring Balances....50@50&10%
Chatillon's Light Spg. Balances....40&10%
Chatillon Straight Balances....40%
Chatillon Circular Balances....50%
Chatillon's Large Dial....30%
Pelouze....50%

Barb Wire—See *Wire, Barb.*

Bars—Crow—

Steel Crowbars, 10 to 40 lb., per lb.. 3@3¼c

Beams, Scale—

Scale Beams, List Jan. 12, '82.30&10%
Chattillon's No. 1....80%
Chattillon's No. 2....40%

Beaters—Egg—

Standard Co.:
No. 5 Steel Handle Dover..₩ gro. $6.50
No. 10 Cast Handle Dover..₩ gro. $8.00
No. 10 Steel Handle Dover.₩ gro. $8 00
No. 15 Extra Heavy Steel Handle, ₩ gro. $15.00
Rival, ₩ gro....$10.00
Taplin Mfg. Co.: ₩ gro.
No. 50 Small Family size....$6.50
No. 100 Regular Family size....$8.00
No. 102 Regular Family size, tinned... $9.50
No. 150 Large Family size....$15.00
No. 152 Large Family size, tinned $17.00
Lyon's, Standard size....₩ doz. $1.75
Wonder (S. S. & Co.)....₩ gro. $7.50

Bellows—

Blacksmith, Standard List. 70@70&10%
C. E. Jennings & Co.. Blacksmith..60&10%
C. E. Jennings & Co., Hand....33⅓%

Blacksmiths—

Inch..	30	32	34	36	38	40
Each	$3.70	3.95	4.55	5.10	5.70	6.55

Extra Length:
Each..$4.25 4.85 5.40 5.95 6.80 7.95

Molders—

Inch..	9	10	11	12	14	16
Doz...	$6.75	7.25	8.50	9.50	12.00	14.50

Hand—

Inch...	6	7	8	9	10	12
Doz....	$3.75	4.25	4.50	5.00	5.75	6.75

Net Prices.

Bells—Cow—

Ordinary goods....75&5@75&10%
High grade....70@70&10%
Jersey....75&10%
Texas Star....50&10%

Door—

Abbe's Gong....45%
Barton Gong....55%
Home, R. & E. Mfg. Co.'s....55&10%
Lever and Pull, Sargent's....20&10&10%

Hand—

Hand Bells, Polished....60@60&10%
White Metal....55@55&10%
Nickel Plated....50@50&10%
Swiss....60%
Silver Chime....80@4 33⅓&10%

Miscellaneous—

Farm Bells....lb. 2@2½c
Steel Alloy Church and School.... 50&10&5@50%
Wilmot & Hobbs Mfg. Co., Gongs....70%

Belting—Rubber—

Common Standard....75@75&10%
Standard....70@70&10%
Extra....60&10&5%
High Grade....60&10@50&10&5%
Boston Belting Co.:
Seamless Stitched, Imperial....45%
Boston....60&5%
Niagara....60&5%

Leather—

Extra Heavy, Short Lap...50&10@60%
Regular Short Lap 60&10@60&10&5%
Standard....60&10&10@70&5%
Light Standard....70@70&10%

Cotton—

Rossendale-Reddaway B. & H. Co.:
Sphinx Brand....60&10%
Durable Brand....70%

Bench Stops—See *Stops, Bench*

Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters....20%
Stoddard's Lightning Tire Upsetters... 40@50%

Bicycle Goods—

John S. Leng's Son's 1899 list:
Chain....50%
Parts....50%
Spokes....50%
Tubes....60%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

Bit Holders—See *Holders.*

Blind Adjusters—See *Adjusters, Blind.*

Blind Fasteners—See *Fasteners, Blind.*

Blind Staples—See *Staples, Blind.*

Blocks—Tackle—

Common Wooden....70@70&10%
Cleveland Steel....50&10@60&10%
Ford's Star Brand Self Lubricating... 60&10%
Hollow Steel, Ford's Pat. Star Brand... 50&10%
Lane's Patent Automatic Lock and Junior....30%
Stowell's Novelty, Mal. Iron....50%
See also *Machines, Hoisting.*

Boards, Stove—

Zinc, Crystal, &c....50&10%

Bolts—

Carriage, Machine &c.—

Common, list Jan. 30, '95..70&8½@..%
Norway Iron, $3.00, list Oct. 7, '84.. 75@75&10%
Phila. Eagle, $3.00 list May 24, '99.... 80@50&10%
Bolt Ends, list Jan. 30, '95.... 70&10&2½@..%
Machine, list Oct. 1, '99.70&10&2½@..%
Machine with C. P., C. & T. Nuts.70%

NOTE—*The rapid advances in manufacturers' prices enable the jobbers to cut prices freely.*

Door and Shutter—

Cast Iron Barrel, Round Brass Knob:

Inch.....	3	4	5	6	8
Per doz...	$0.33	.36	.45	.57	.80

Cast Iron Spring Foot:

Inch.....	6	8	10
Per doz....	$1.00	1.25	1.75

Cast Iron Chain, Flat, Japanned:

Inch.....	6	8	10
Per doz....	$0.85	1.20	1.50

Cast Iron Shutter, Brass Knobs:

Inch.....	6	8	10
Per doz....	$0.60	.90	1.15

Wrought Barrel Brass Knob:

Inch.....	3	4	5	6	8
Per doz....	$0.44	.50	.61	.70	1.28

Wrought Barrel....70&10@75&5%
Wrought "Bronzed.40&5@50&10%
Wrought Flush, B. K..50&10@60&10%
Wrought Shutter...40&10&10@60&5%
Wrought Square Neck....50@50&10%
Wrought Sunk....50@50&10%
Ives' Patent Door....60%

Stove and Plow—

Plow....60&10@..%
Stove....77½&%

Tire—

Common....77½%
American Screw Company:
Norway Phila., list Oct. 16, '84....75%
Eagle Phila., list Oct. 16, '84....77½%
Bay State, list Dec. 28, '99....70%
Franklin Moore Co.:
Norway Phila, list Oct. 16, '84....75%
Eagle Phila., list Oct. 16, '84....77½%
Eclipse, list Dec. 28, '99....70%
Port Chester Bolt & Nut Company
Empire, list Dec. 28, '99....70%
Keystone Phila. list Oct. '84....77½%
Norway Phila, list Oct. '84....75%

Borers, Tap—

Borers Tap, Ring, with Handle:

Inch.....	1¼	1⅜	1¾	₩
Per doz...	$3.50	4.50	5.00	6.50
Inch.....			2¼	2½
Per Doz....			$7.50	10.25

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.65; No. 3, $2.50 each....25@30%

Boring Machines—See *Machines, Boring.*

Boxes Mitre—

C. E. Jennings & Co....40%
Seavey's, per doz., $30....40%

Braces—

NOTE.—*Most Braces are sold at net prices.*
Common Ball, American..$1.15@1.25
Barber's....50&10&10@60&10%
Fray's Genuine Spofford's....60%
Fray's No. 70 to 120, 81 to 129, 207 to 414....60%
C. E. Jennings & Co....50&10%
P., S. & W. Co., Peck's Patent 50&10@60%

Brackets—

Wrought Steel....70@10@75&5%
Bradley's Wire Shelf:
Full cases....80% ₩
Broken cases....75&10%
Griffin's Pressed Steel....75&10%
Griffin's Folding Brackets....70&10%

Bright Wire Goods—See *Wire and Wire Goods.*

Broilers—

Wire Goods Co....70@70&10%

Buckets, Well and Fire—See *Pails*

Bucks, Saw—

Hoosier....₩ gro. $36.00

Bull Rings—See *Rings, Bull.*

Butts—Brass—

Wrought list Sept., '96.25&10@35&5%
Cast Brass, Tiebout's....50%

Cast Iron—

Fast Joint, Broad....50@50&10%
Fast Joint, Narrow....50@50&10%
NOTE.—*Jobbers often sell the following at 70&5%:*
Loose Joint....70@70&5%
Loose Pin....70@70&5%
Mayer's Hinges....70@70&5%
Parliament Butts....70@70&5%

Wrought Steel—

Loose Joint....
Table and Back Flaps..
Narrow and Broad....
Inside Blind....
Loose Pin....
Loose Pin, Ball and Steeple Tip
75@75&5%
Bronzed Wrt. Nar. and Inside Blind Butts....50&10@50&10&5%

Cages, Bird—

Hendryx, Brass:
3000, 5000, 1100 series....5%
1200 series....33⅓%
200, 300, 600 and 900 series....40&10%
Hendryx Bronze:
700, 800 series....40&10%
Hendryx Enameled....40&10%

Calipers—See *Compasses.*

Calks, Toe and Heel—

Blunt, 1 prong....per lb. 3½@4c
Sharp, 1 prong....per lb. 4½@4½c
Perkins' Blunt....₩ ℔ 5 ¢
Perkins' Sharp....₩ ℔ 5½¢

Can Openers—See *Openers, Can*

Cans, Milk—

	3	8	10 gal.	
Illinois Pattern.	$1 75	2.10	2.25	each.
Iowa Pattern...	....	2.40	2.60	each.
Buffalo Pattern.	...	2.30	2.50	each.
	20	30	40	qts.
New York Patt'rn	3.00	3.25	3.40	each.
Baltimore Patt'rn	2.50	2 85	3.10	each.

Cans, Oil—

Buffalo Family Oil Cans:

3	5	10 gal.
$48.00	60.00	108 gro.

Caps—Percussion—

Eley's E. B....50¢
G. D....per M 32@34c
F. L....per M 57@60c
G. E....per M 47@50c
Musket....per M 57@60c

Primers—

Berdan Primers, $1.00....5%
B. L. Caps (Sturtevant Shells) $1.00....5%
All other primers....$1.10@$1.15

Carpet Stretchers—
See *Stretchers, Carpet.*

Cartridges—
B. B. Caps, Con., Ball Swgd.....$1.90
B. B. Caps, Round Ball... $1.12@1.18
Blank Cartridges:
32 C. F., $5.50.....10@5%
38 C. F., $7.01.....10@5%
22 cal. Rim, $1.50.....10@5%
32 cal. Rim, $2.75.....10@5%
Central Fire 2%
Pistol and Rifle.....15@5%
Primed Shells and Bullets.....15@5%
Rim Fire Sporting.....50%
Rim Fire, Military.....15@5%

Casters—
Red.....70@70&10%
Plate.....75@75&5%
Philadelphia.....75@75&10%
Boss.....70&10%
Boss Anti-Friction.....70&10%
Martin's Patent (Phoenix).....45%
Standard Ball Bearing.....45%
Tucker's Patent, low list.....30%

Cattle Leaders—
See *Leaders, Cattle.*

Chain—
American Coil, Less than Casks:

5-16	*¼*	*5-16*	*⅜*	*7-16*	*½*	*9-16*
7.30	*5.40*	*4.40*	*3.55*	*3.40*	*3.30*	*3.25*
⅝	*¾*	*⅞ to 1¼ inch.*				
3.25	*3.20*	*3.20 cents per lb.*				

Cask lots deduct 25c per 100 lbs.
German Coil, list July 24, '97.60&10@10%
German Halter Chain, list July 24, '97.....60&10@10%
Traces, Western Standard: 100 pair
6½—6-3, Straight, with ring...$26.00
6½—6-2, Straight, with ring..$27.00
6½—8-2, Straight, with ring..$31.00
6½—10-2, Straight, with ring..$35.00
Add 2¢ per pair for Hooks.
Twist Traces 2¢ per pair higher than Straight Link.
Trace, Wagon and Fancy Chains, list April, '98.....50@10@50%
Jack Chain, list July 10, '93:
Iron.....60@50@10%
Brass.....60@40@10%
Safety Chain.....70@70@10%
Gal. Pump Chain.....lb 4½@4¼c
Covert Sad. Works:
Breast, Hitching and Rein Chains..50%
Covert Mfg. Co.:
Breast.....35&2%
Halter.....35&2%
Heel.....35&2%
Rein.....35&2%
Stallion.....35&2%
Oneida Community:
Eureka Coil and Halter.....60@40&5%
Niagara Coil and Halter.....60@60&5%
Niagara Cow Ties. ....45&5@45&10&5%
Am. Coil and Halters....50@10&5@60%
Am Cow Ties.....35&5@40&5%
Wire Goods Co.:
Dog Chain.....60%
Universal Dbl-Jointed Chain.....45%

Chalk—(From Jobbers.)
Carpenters', Blue.....gro. 45c
Carpenters', Red .....gro. 40c
Carpenters', White.....gro. 35c
See also Crayons.

Chalk Lines—See *Lines.*

Checks, Door—
Bardsley's.....40&10%
Columbia.....50&10%
Eclipse.....60@60&10%

Chests, Tool—
American Tool Chest Co.:
Boys' Chests, with Tools.....55%
Youths' Chests, with Tools.....40%
Gentlemens' Chests, with Tools.....30%
Farmers', Carpenters', etc, Chests, with Tools.....30%
Machinists' and Pipe Fitters' Chests, Empty.....50%
C. E. Jennings & Co.'s Machinists' Tool Chests.....25@25&10%

Chisels—
Socket Framing and Firmer
Standard List.....70@10@...%
Buck Bros.....30%
Charles Buck.....30%
C. E. Jennings & Co. Socket Firmer No. 10.....60&10%
C. E. Jennings & Co. Socket Framing No. 15.....60&10%
Swan's.....70&5%
L. & I. J. White.....30@30&5%

Tanged—
Tanged Firmers.....40@5@40&10%
Buck Bros.....30%
Charles Buck.....30%
C. E. Jennings & Co. Nos. 191, 181....25%
L. & I. J. White, Tanged.....25&5%

Cold—
Cold Chisels, good quality lb. 14@16c
Cold Chisels, fair quality.....lb. 12c
Cold Chisels, ordinary.....lb. 8@9c

Chucks—
Beach Pat., each $8.00.....20%
Skinner Patent Chucks:
Combination Lathe Chucks.....40%
Drill Chucks, Patent and Standard...30%
Drill Chucks, New Model.....25%
Independent Lathe Chucks.....40%
Improved Planer Chucks.....20%
Universal Lathe Chucks.....40%
Face Plate Jaws.....35%
Standard Tool Co.:
Improved Drill Chuck.....45%
Union Mfg. Co.:
Combination.....40%
Czar Drill 30%
Geared Scroll 30%
Independent.....40%
Union Drill.....30%
Universal.....40%
Face Plate Jaws.....35%

Clamps—
Adjustable, Hammers'.....20@20&5%
Cabinet, Sargent's.....50&10%
Carriage Makers', P., S. & W. Co. 40&10%
Carriage Makers' Sargent's.....50&10%
Beaty, Parallel.....33⅓&10%
Livesman's, Udica Drop Forged Tool Co.....40%
Saw Clamps, see *Vises, Saw Filers.*

Cleaners Walk—
Star Socket, All Steel.....₱ doz. $4.00 net
Star Shank, All Steel.....₱ doz. $3.75 net
W. & C. Shank, All steel, 7½ in. ₱ doz., $3.35; 8 in., $3.40; 8½ in., $3.50.

Cleavers, Butchers'—
Foster Bros.....30%
New Haven Edge Tool Co.'s.....40&10%
Fayette R. Plumb.33⅓&10@33⅓&10&5%
P., S & W .....33⅓&5@33⅓&10%
L. & I. J. White.....25%

Clippers—
Chicago Flexible Shaft Company:
Handy Toilet.....₱ doz. $7.20
Mascotte Toilet .....₱ doz. $3.40
Monitor Toilet.....₱ doz. $9.00
Stewart's Patent.....₱ doz. $10.00

Clips, Axle—
Eagle and Superior ¼ and 5-16 inch.....70@10%
Norway, ¼ and 5-16 inch..70@7@10%

Cloth and Netting, Wire
—*See Wire, &c.*

Cocks, Brass—
Hardware list (Globe, Kerosene, Racking, &c.).....70@70@10%

Coffee Mills—See *Mills, Coffee.*

Collars Dog—
Brass, Pope & Stevens' list.....40%
Embossed, Gilt, Pope & Stevens' list30&10%
Leather Pope & Stevens' list.....40%

Compasses Dividers, &c.
Ordinary Goods.....70@10@75%
Bemis & Call Hdw. & Tool Co.:
Dividers.....65%
Calipers, Call's Patent Inside.....55%
Calipers, Double.....65%
Calipers, Inside or Outside.....65%
Calipers, Wing.....60%
Compasses.....50%
J. Stevens A. & T. Co.....25&10%

Conductor Pipe, Galvanized—
Factory Shipments to Jobbers:

Territory.	*Carload. Loose.*	*L. C. L. Nested.*
Eastern....	*75&10%*	*75&5%*
Central....	*75&7½%*	*75&2½%*
Southern..	*75&5%*	*75%*
S. Western.	*75%*	*70&10&2½%*

Terms 2% for cash.
See also *Eave Trough and Elbows*

Coolers, Water—
Nos.... 2 3 4 6
Labrador $11.50 $14.00 $17.50 $20.00
8 gal.
$23.00
Nos 3 4 6 8
Iceland.. $23.00 $25.00 $30.00 $37.50
10 14 gal.
$57.00 $72.00

Coopers' Tools—
See *Tools, Coopers'.*

Cord—Sash—
Braided, Drab.....lb. 25c
Braided, White, Common, lb17½@18c
Cable Laid Italian, lb. A, 18c; B, 16c
Common India.....lb 9 @9½c
Cotton Sash Cord, Twisted....12@16c
Patent Russia .....lb 13½@13c
Cable Laid Fussia.....lb. 13½@14c
India Hemp, Braided.....lb 14@15c
India Hemp .....lb. 10@12c
Patent India .....lb. 10@12c
Pearl Braided, cotton .....₱ lb 17@18¢
Massachusetts, White.....₱ lb 22½¢
Massachusetts, Drab.....₱ lb 26½¢
Eddystone Braided Cotton.....₱ lb 14¢
Harmony Cable Laid Italian.....₱ lb 18¢
Osawan Mills:
Crown, Solid Braided White...₱ lb 18¢
Braided, Giant, White.....₱ lb 17¢
Peerless:
Cable Laid Italian.....16¢
Cable Laid Russian.....14¢
Cable Laid India.....12¢
Braided India.....18¢
Phœnix, White.....19¢
Samson:
Braided, Drab Cotton .....₱ lb 32½¢
Braided, Italian Hemp... ....₱ lb 32½¢
Braided, Linen .....₱ lb 49¢
Braided, White Cotton, Spot.₱ lb 28.¢
Silver Lake:
A quality, Drab, 40¢.....15%
A quality, White, 35¢.....15%
B quality, Drab, 35¢.....15%
B quality, White, 30¢.....15%
Italian Hemp, 40¢ 15%
Linen, 57½¢.....15%

Wire, Picture—
Braided or Twisted,
See *Trade Report.*

Corn Knives and Cutters
—See *Knives, Corn.*

Corn Planters—
See *Planters, Corn—*

Crackers, Nut—
Little Giant.....₱ gr. $24.00

Cradles—
Grain.....50%

Crayons—
White Round Crayons, gross.5½@6c
Cases, 100 gro., $5.00, at factory.
D. M. Steward Mfg. Co.
Metal Workers' Crayons.gr. $2.50
Soapstone Pencils, round, flat or square.....gr.$1.50
Rolling Mill Crayons.....gr. $2.50
Railroad Crayons (composition) gr. $2.00
Case lots 20%
See also *Chalk.*

Creamery Pails—See *Pails, Creamery.*

Crooks, Shepherds'—
Fort Madison, Heavy .....₱ doz. $7.00
Fort Madison, Light.....₱ doz. $6.50

Crow Bars—See *Bars, Crow.*

Cultivators
Cutters— Glass—
Smith & Hemingway Co.....30%

Meat—
Hale's..No. 11 & 111 12 & 112 13 & 113
Per doz .. $10.80 13 20 18.00
American.....90%
Nos.....1 2 3 4 B 5
Each.....$5 $7 $10 $25 $50 $80
Connecticut:
No 0 1 8 10 12
Each.. .$1.75 2.25 3.00 3.00 3.50
Enterprise.....25@25&7½%
Nos.....5 10 12 22 32
Each.....$2 $3 $2.50 $4 $6
Dixon's, ₱ doz.....33⅓&10%
Nos.....1 2 3 4
Each.....$14.00 $17.00 $19.00 $30.00
Home No. 1, ₱ doz. $23.75.....50&10%
Little Giant, ₱ doz.....33⅓&33⅓&5%
Nos. 305 310 312 340 322
$35.00 $48.00 $44.00 $75.00 $68.00
Sterling.....33⅓&5%
Nos.....1 2
Each.....$5.00 $2.50
Miles' Challenge, ₱ doz.....45@45&10%
Nos.....1 2 3
$22.00 $30.00 $40.00
New Triumph No. 605, ₱ doz. $24.00..
33⅓&5%
Woodruff's, ₱ doz 40%
Nos.....100 150
$15.00 $18.00
Chadborn's Smoked Beef Cutter, ₱ doz. $60.00
Enterprise Beef Shavers.....25@30%

Slaw and Kraut—
Henry Disston & Sons:
Slaw, Corn Grater, &c.....40%
Kraut Cutters 24 x 7, 26 x 8, 30 x 9..55%
Kraut Cutters 36 x 12, 40 x 12.....40%
Tucker & Dorsey Mfg. Co.:
Kraut Cutters.....40%
Slaw Cutters, 1 Knife, ₱ gr....$18@$20
Slaw Cutters, 2 Knife, ₱ gr....$22@$30

Tobacco—
All Iron, Cheap.....doz. $4.25@$4.50
Enterprise.....25@30%
National, ₱ doz. $21.00.....40%
Sargent's, ₱ doz. $24.00.....45&10%

Washer—
Appleton's, ₱ doz. $16.00.....50&10&10%
Bonney's.....₱ doz. $4.75

Diggers, Post Hole, &c.—
Dalbey Post Hole Auger..per doz .$10.00
Iwan's Improved Post Hole Auger....40%
Iwan's Perfection Post Hole Digger...
₱ doz. $9.00
Kohler's Universal.....₱ doz. $14.00
Kohler's Little Giant.....₱ doz. $15.00
Kohler's Hercules.....₱ doz. $12.00
Kohler's Invincible.....₱ doz. $10.00
Kohler's Rival.....₱ doz. $9.00
Kohler's Pioneer.....₱ doz. $9.00
Never-Break Post Hole Diggers, ₱ doz. $24.00.....60%
Samson, ₱ doz. $34.00.....25%

Dividers—See *Compasses.*

Dog Collars—See *Collars, Dog.*

Door Checks—
See *Checks, Door.*

Door Springs—
See *Springs, Door.*

Drawers, Money—
Tucker's Pat. Alarm Till No. 1, ₱ doz. $18; No. 2, $15 No. 3, $14; No. 4, $18.

Drawing Knives—
See *Knives, Drawing.*

Drills and Drill Stocks—
Common Blacksmiths' Drill..each $1.50@$1.75
Blacksmiths' Self-feeding.....each $3.75@4.00
Breast, Millers Falls, each $3.00 ..15&10%
Breast, P., S. & W .....30@30&10%
Goodell Automatic Drills..40&5@40&10%
Johnson's Automatic Drills Nos. 2 and 3.....16&5%
Johnson's Drill Points.....25&1%
Ratchet, Curtis & Curtis 25%
Ratchet, Parker's 40%
Ratchet, Weston's.....20@25%
Ratchet, Whitney's, P. S. & W....40&10%
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00.....33⅓&5%

Twist Drills—
Standard List..... .60@5@65@5%

Drill Bits or Bit Stock Drills—See *Augers and Bits.*

Drill Chucks—See *Chucks.*

Dripping Pans—
See *Pans, Dripping.*

Drivers, Screw—
Balsey's Screw Holder and Driver, ₱ doz. 2½-inch, $6; 4-in., $7.50 6-in., $9..40%
Buck Bros.....30%
Buck Bros' Screw Driver Bits.....37½%
Champion.....40&10%
Douglass Mfg. Co.....20@20&10%
Fray's Hol. H'dle Sets, No. 8, $12.00 50%
Gay & Parsons' Ratchet.....35%
Goodell's Automatic .....50&10@50&10@10&5%
Mayhew's Black Handle.....50%
Mayhew's Monarch.....45&10%
New England Specialty Co.....50&10%
Sargent & Co.'s:
Nos. 1,50,55 and 60.....50&10&10%
Nos. 20 and 40.....66⅔&10%
Screw Driver Bits.....₱ doz. 50@70¢
Smith & Hemenway Co.....40&5%
Stanley's R. & L. Co.'s:
No. 64, Varnished Handles.....60&10%
No. 86.....70&10%
Swan's:
Nos. 65 to 68.....50%
No. 40.....40&10%
Nos. 25, 35 and 45.....20@10&10%

Eave Trough, Galvanized
Factory Shipments to Jobbers.

Territory.	*Carload.*	*L. C. L.*
Eastern.....	*80@10@5%*	*80@10%*
Central.....	*80&10@2½%*	*80@7½%*
Southern.....	*80@10%*	*80@5%*
S. Western....	*80@2½%*	*80%*

Terms, 2% for cash.
See also *Conductor Pipe.*

Egg Beaters—See *Beaters, Egg*

Egg Openers—
See *Openers, Egg.*

Elbows and Shoes—
Factory shipments to jobbers. ..60@10@5%
Perfect Elbows (S. S. & Co.).....40%

Emery, Turkish—

	4 to ⅛	*5 to 150*	*Flour*
Kegs.....lb.	*4½c*	*5 c*	*3 c*
¼ Kegs ....lb.	*4¼c*	*5¼c*	*3 c*
¼ Kegs ....lb. 5 c		*5½c*	*3½c*
10-lb cans, 10 in case..... 6 c		*6½c*	*½c*
10-lb. cans, less than 10 ....10 c		*10 c*	*8 c*

Enameled and Tinned Ware—See *Ware, Hollow.*

Escutcheon Pins—
See *Pins, Escutcheon.*

Extractors, Lemon Juice
—See *Squeezers, Lemon.*

Fasteners, Blind—
Zimmerman's .....50&10%

Faucets—
Cork Lined.....70@5@70@10@5%
Metallic Key, Leather Lined..... 70@70@10%
Red Cedar..... .....50@50@5%
B. & L. B. Co.:
West's Lock, Open and Shut Key50&10%
John Sommer's Peerless Tin Key.... 40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Metal Key.50&10%
John Sommer's Duplex Metal Key....60%
John Sommer's Diamond Lock.....40%
John Sommer's I. X. L. Cork Lined...50%
John Sommer's Reliable Cork Lined 50&10%
John Sommer's Common Cork Lined.70%
John Sommer's Chicago Cork Lined..60%
John Sommer's O. K. Cork Lined.....50%
John Sommer's Perfection Cedar....40%
Star.....60@60&5%
Star, Metal Plug, new list.....40@40&5%
Lockport, Metal Plug, reduced list.60&5%
McKenna, Brass:
Burglar Proof, N. P 35%
Improved, ⅝ and ⅞ inch.....35%
Self Measuring:
Enterprise, ₱ doz. $36.00.....40%
Lane's, ₱ doz. $36.00.....40&10%
National Measuring, ₱ doz. $36.00...40%

Felloe Plates—
See *Plates, Felloe.*

Files—Domestic—
List revised Nov. 1, 1899.
Best Brands.....70@75@5%
Good Brands.....75&10@75&10@10%
Fair Brands.....80@80@10%
Second Quality.....80@10@80@25%

Imported—
Stubs' Tapers, Stubs' list, July 24, '97.....35%

Fixtures, Grindstone—
Net Prices:

Inch....	*15*	*17*	*19*	*21*	*24*
Per doz.	*$2.90*	*$ 10*	*3.30*	*3.80*	*4.60*

Stowell's Giant Grindstone Hanger.....
₱ doz $6.00
Stowell's Grindstone Fixtures.....50%
P., S. & W. Co.....50&10&10%
Reading Hardware Co.....30&20&10%
Sargent's .....60&10&10%

Fluting Machines—
See *Machines, Fluting.*

Fodder Squeezers—
See *Squeezers, Fodder.*

Forks—
Sept. 1, 1900, list.
Grain or Barley Forks, 13 to 20 inches.....70&6%
Hay, 2 tine 65%
Hay, 3 tine.....66⅔%
Hay, 4 tine, Header and Barley Forks, 13 to 16 inches.....66⅔%
Manure, 4 tine 70%
Manure, 5 and 6 tine.....70%
Spading.....70&5%
Iowa Dig-Ezy Potato.....65%
Victor, Hay.....66⅔%
Victor, Manure.....70%
Victor, Header.....60&30%
Champion, Hay.....66⅔%
Champion, Manure.....70%
Columbia, Hay.....66⅔&5%
Columbia, Manure 70%
Columbia, Spading 70%
Hawkeye Wood Barley 4 tine ₱ doz. $5.00; 6 tine, $6.00.
W. & C. Potato Digger.....65%
Acme Hay.....60&20&7½%
Acme Manure.....60&25%
Dakota Header.....70&10&2½%
Jackson Steel Barley.....70&10&2½%
Kansas Header.....65&20%
W. & C. Favorite Wood Barley 4 tine, ₱ doz., $5.00; 5 tine, $6.00
Plated.—See *Spoons.*

Frames—
Saw—
Red, Polished and Varnished..doz. $1.15 & $1.30
White.....doz. 75@80c

Screens and Frames—
See *Screens.*

Freezers, Ice Cream—

Qts...	*2*	*3*	*4*	*6*	*8*	*10*
Best.	*$1.45*	*1 65*	*1.95*	*2.40*	*3.20*	*4.20*
Good	*$1 25*	*1.40*	*1.70*	*2.15*	*2.75*	*3.75*
Fair.	*$1.00*	*1.10*	*1 30*	*1.75*	*2.30*	*2.90*

Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Fuse—
Per 1000 Feet.
Hemp Fuse $2.60
Cotton Fuse.....2.90
Single Taped Fuse.....3.25
Double Taped Fuse.....4.20
Triple Taped Fuse.....5.00
Tackle

Gates, Molasses and Oil—
Stebbins' .....80&10@80&10&10%

Gauges—
Marking, Mortise, &c.....55&10@55&10@10%
Barrett's Comb. Roller Gauge.....
₱ doz. $6.75@7.25
Stanley R. & L. Co.'s Butt & Babbet Gauge.....90&10%
Wire, Brown & Sharpe's.....25%
Wire, Morse's 25%
Wire P., S. & W. Co.....10&10&5%

Gimlets—

Nail, Metal, Assorted, gro. $1.40@1.75
Spike, Metal, Assorted gro. $3.00@3.50
Nail, Wood Handled, Assorted, gro. $4.00@4.25
Spike, Wood Handled, Assorted gro. $5.00@5.25

Glass, American Window

Jobbers' List, Sept. 1, 1900.
Small lots from store:
Single and Double Strength, all sizes.....35&5%
10% to be added on all first quality, both Single and Double.

Glue—Liquid, Fish—

List A, Bottles or Cans, with Brush. 37½@50%
List B, Cans (½ pts., pts., qts.)..... 35½@45%
List C, Cans (½ gal., gal.) ....25@45%

Glue Pots—See *Pots, Glue.*

Grease, Axle—

Common Grade.....gro. $5.00@6.00
Dixon's Everlasting....10-lb pails, ea. $5
Dixon's Everlasting, in bxs..₩ doz. 1 lb $1.20; 2 lb $2.00
Snow Flake:
1 qt. cans, per doz. $2.00; 2 qt., $3.20; 1 gal. cans per doz. $6.00; 3 gal. $16.00; 5 gal. $24.00 } 10%

Grindstone Fixtures—

See *Fixtures, Grindstone.*

Guards, Snow—

Cleveland Wire Spring Co.:
Galv. Steel ₩ 1000.....$9.00
Copper ₩ 1000.....$18.00

Gun Powder—See *Powder.*

Hack Saws—See *Saws.*

Hafts, Awl—

	gro.
Peg Patent, Leather Top	*$4.90@5.25*
Peg Patent, Plain Top	*$3.50@3.75*
Sewing, Brass Ferrule.	*$1.50@1.60*
Saddlers', Brass Ferrule	*$1.35@1.45*
Peg, Common	*$1.25@1.35*
Brad, Common	*$1.50@1.75*

Halters and Ties—

Covert Mfg. Co., Web.....45&2%
Covert Mfg. Co., Jute Rope.....45&2%
Covert Mfg. Co., Sisal Rope.....30&2%
Covert's Saddlery Works', 96 list, Web.....60&10%
Covert's Saddlery Works, Leather.....60&10%
Covert's Saddlery Works, Jute.....60&5%
Covert's Saddlery Works, Sisal.....60%
Covert's Saddlery Works, Manila.....60&5%
Covert's saddlery Works, Cotton.....70%

Hammers—

Handled Hammers—

Heller's Machinists'.....50@50&5%
Heller's Farriers.....50@50&5%
Magnetic Tack, Nos. 1, 2, 3, $1.25, $1.50, $1.75.....40&10%
Pecx, Stow & Wilcox.....40@40&10%
Fayette R. Plumb:
Plumb, A. E. Nail.....40&10@50%
Engineers' and B. S. Hand.....60&10&7½%
Machinists' Hammers.....60&10&7½%
Riveting and Tinners'.....50@50&10%
Sargent's C. S. New List.....45&10%

Heavy Hammers and Sledges—

3 lb. and under...lb. 45c
3 to 5 lb .....lb. 36c } 80&10@80
Over 5 lb.....lb. 30c } &10&10%
Wilkinson's Smiths'.....9½c@10c lb.

Handcuffs and Leg Irons

See *Police Goods.*

Handles—

Agricultural Tool Handles—

Hoe Rake, Fork, &c.....60@60&10%
Shovel, &c., Wood D Handle.50@50&5%

Cross-Cut Saw Handles—

Atkins'.....40&5%
Champion.....45@45&10%
Disston's.....50%

Mechanics' Tool Handles—

Auger, assorted.....gro. $2.30@2.50
Brad Awl.....gro. $1.25@1.50
Chisel Handles:
Apple Tanged Firmer, gro. ass'd. $2.25@2.35; large, $2.50@2.60.
Hickory Tanged Firmer, gro. ass'd. $1.75@2.20; large, $2.50@2.70.
Apple Socket Firmer, gro. ass'd, $1.70@1.85; large, $2.00@2.25
Hickory Socket Firmer, gro ass'd. $1.60@$1.75; large, $1.75@$2.00
Hickory Socket Framing, gro. ass'd. $2.50@2.75; large, $2.65@2.85
File, assorted.....gro. $1.00@1.15
Hammer, Hatchet, Axe, &c.....60%
Hand Saw, Varnished, doz. 70@75c
Not Varnished.....55@60c
Plane Handles:
Jack, doz. 25c; Jack Bolted..55@60c
Fore, doz. 35@38c; Fore, Bolted.. 70@75c

Hangers—

Barn Door, New Pattern, Round Groove, Regular:

Inch	*3*	*4*	*5*	*6*	*8*
Doz	*$0.85*	*1.30*	*1.60*	*1.95*	*$2.45*

Barn Door, New England Pattern, Check Back, Round Groove, Regular:

Inch	*3*	*4*	*5*	*6*
Doz	*$1.45*	*1.90*	*2.35*	*3.10*

Chicago Spring Butt Co.:
Friction.....25%
Oscillating.....25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator.....40%
Railroad.....55%
Cron & Hunger Co.:
Loos Axle.....60%
Roller Bearing.....60&10%
Lane Bros.:
Parlor, Ball Bearing.....$4.00
Parlor, Standard.....$3.25
Parlor, New Model.....$2.75
Parlor New Champion.....$2.40
Barn Door, Standard.....60&10%
Covered.....50&10&10&5%
Special.....60&10%
Lawrence Bros.:
Advance.....60%
Cleveland.....60&10%
Crown.....60%
New York.....60%
Peerless.....60&10%
Sterling.....60%
McKinney Mfg. Co.:
No. 2, Standard, $18.....60&10%
No. 1, Special, $13.....60&10%
Stowell Mfg. and Foundry Co.:
Atlas.....60%
Baggage Car Door.....50%
Climax Anti-Friction.....50%
Elevator.....40%
Interstate.....50&10%
Magic.....50%
Matchless.....60%
Nansen.....60&10%
Parlor Door.....50%
Railroad.....50&10%
Street Car Door.....50&10%
Steel, Nos. 300, 400, 500.....40&15%
Zenith for Wood Track.....50&10%
Taylor & Boggs Foundry Co.:
Kidder's.....50&50&10%
Van Wagoner & Williams Hdw Co.:
American Trackless.....33⅓&10%
Wilcox Mfg. Co.:
Bike Roller Bearing.....60&10%
C. J. Roller Bearing.....60&10%
Cycle Ball Bearing.....50%
Dwarf Ball Bearing.....40%
Ives, Wood Track.....60&10%
L.T. Roller Bearing.....60&10&10%
New Era Roller Bearing.....50&10%
O. K. Roller Bearing.....60&10&5%
Prindle, Wood Track.....60%
Richards' Wood Track.....60%
Richards' Steel Track.....50&10%
Roseoe Roller Bearing.....60&10%
Tandem Nos. 1 and 2.....60%
Underwriters' Roller Bearing.....40%
Wilcox Auditorium Ball Bearing.50%
Wilcox Barn Trolley No. 123.....40%
Wilcox Fire Trolley, Roller Bearing.....10%
Wilcox Le Roy Noiseless Ball Bearing.....40%
Wilcox New Century.....50&10&10%
Wilcox Trolley Ball Bearing.....40%

Extra 5&10% often given.

Harness Menders—See *Menders.*

Harness Snaps—See *Snaps.*

Hasps—

McKinney's Perfect Hasp ₩ doz 40&10%
Wrought Hasps, Staples, &c.—See *Wrought Goods.*

Hatchets—

Best Brands.....40&10@50%
Cheaper Brands....50&10@50&10&5%
Note.—Net prices often made.

Hay and Straw Knives—See *Knives.*

Hinges—

Blind and Shutter Hinges—

Surface Gravity Locking Blind: (Victor; National; 1838 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)

No	*1*	*3*	*5*
Doz pair	*$0.75*	*1.45*	*2.90*

Mortise Shutter: (L. & P., O. S., Dixie, &c.)

No	*1*	*1½*	*2*	*2½*
Doz. pair	*$0.60*	*.55*	*.52*	*.45*

Mortise Reversible Shutter, (Buffalo, &c.)

No	*1*	*1½*	*2*
Doz. pair	*$0.65*	*.60*	*.55*

Parker.....70@75%
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Reading's Gravity.....75&10%
Sargent's, Nos. 1, 3, 5.....60%&10%
Sargent's, Nos. 11 & 13.....70&10%
Wrightsville H'dware Co.:
O. S. Lull & Porter.....80&2½%
Acme, Lull & Porter.....75&10%
Queen City Reversible.....75&10%
Stenger's Positive Locking, Nos. 1 & 3.....70&10&5%
Shepard's Noiseless, Nos. 60, 65, 55.....70&10%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&7½%
1898, Old Pat'n. Nos. 1, 3 & 5.....75&7½%
Tip Pat'n, Nos. 1, 3 & 5.....75&7½%
Buffalo Gravity Locking, Nos. 1, 3 & 5.....75&7½%
Shepard's Double Locking, Nos. 20 & 25.....70&10%
Champion Gravity Locking, No. 75.....75&7½%
Steamboat Gravity Locking, No. 10.....5&7½%
Pioneer, Nos. 060, 45 & 5½.....75&7½%
Empire, Nos. 101 & 103.....70&7½%
W. H. Co.'s Mortise Gravity Locking, No. 2.....80&10%
Stanley's Steel Gravity Blind Hinges, ₩ doz. sets $1.30.....30&10%

Gate Hinges—

Clark's or Shepard's—Doz. sets:

No	*1*	*2*	*3*
Hinges with Latches	*$1.90*	*2.50*	*3.85*
Hinges only	*1.30*	*1.90*	*2.90*
Latches only	*0.65*	*0.65*	*0.95*

New England:
With Latch.....doz ....@$1.55
Without Latch ....doz. ....@$1.25
Reversible Self-Closing:
With Latch.....doz. ....@$1.80
Without Latch.....doz. ....@$1.45
Western:
With Latch.....doz. $1.50@1.75
Without Latch.....doz. $0.95@1.20
Wrightsville H'dware Co.:
Shepard's or Clark's, Nos. 1 & 2..65&2½%
Shepard's or Clark's, No. 3.....55&5%

Spring Hinges—

Holdback, Cast Iron, gro. $8.00@8.25
Non-Holdback, Cast Iron..... gro. $6.75@7.25
J. Bardsley
Bardsley's Patent Checking.....15%
Bommer Bros.:
Bommer's.....33⅓%
Chicago Spring Butt Co.:
Chicago.....20%
Floor Hinge.....40%
Garden City Engine House.....20%
Keene's Saloon Door.....20%
Triple End.....40%
Lawson Mfg. Co.:
Matchless.....30%
Matchless Pivot.....35%
Stover Mfg. Co.:
Ideal, No. 16, Detachable, ₩ gr. $12.50
Ideal, No. 4.....₩ gr. $9.00
New Idea No. 1.....₩ gr. $9.00
New Idea, Double Acting.....45%
Van Wagoner & Williams Hdw. Co.:
Acme, Wrt. Steel.....30%
Acme, Brass.....20%
American.....30%
Columbia, No. 14.....₩ gr. $9.00
Columbia, No. 18.....₩ gr. $25.00
Columbia, Adjustable.....30%
Gem, new list.....25%
Clover Leaf.....₩ gr. $12.50
Oxford new list.....25%

Extra 10% often given on most of these Hinges.

Wrought Iron Hinges—

Strap and T Hinges, &c., list Mar. 15, 1898:
Light Strap Hinges..66⅔%
Heavy Strap Hinges..70%
Light T Hinges....50&10%
Heavy T Hinges....60&10%
Extra Heavy T Hinges... 66⅔% } Extra 25&10@ 25&10&10%
Hinge Hasps.....45 }
Cor. Heavy Strap .....70% } 25&10%
Cor. Ex. Heavy T.....66⅔% }
Screw Hook and Strap. { *6 to 12 in..lb 2¾@3 c* / *14 to 20 in..lb. 2¾@3¼c* / *22 to 36 in..lb 2¾@3½c*
Screw Hook and Eye:
¾ to 1 inch.....lb. 5¾@6 c
⅝-inch.....lb 6¼@7 c
½-inch.....lb. 8¾@9 c

Hods, Coal—

	15	*16*	*17*	*18 inch.*
Galv. Open	*$2.05*	*2.20*	*2.45*	*2.65 ₩ doz.*
Jap. Open	*$1.55*	*1.70*	*1.85*	*2.05 ₩ doz.*
Galv. Funnel	*$2.75*	*2.90*	*3.10*	*3.45 ₩ doz.*
Jap. Funnel	*$2.00*	*2.15*	*2.35*	*2.70 ₩ doz.*

Hoes—Eye—

Scovil and Oval Pattern..... 60&5@60&10&5%
Grub, list Feb. 23, 1899, 70&5@70&10%
D. & H. Scovil.....35%

Handled—

Sept. 1, 1900, List:
Field and Garden.....75&2%
Ladies', Boys', Toy and Onion... 70&10&10%
Street and Mortar .....75&7½&2%
Cotton.....70&10&10&5&2%
Planters'.....70&30%
Weeding.....75%
Note.—Manufacturers and jobbers use a diversity of lists, and often sell at net prices
Ft. Madison Crucible Garden Hoe.....75&2%
Ft. Madison Crescent Cultivator Hoe, per doz.....75&10&2%
Ft. Madison Mattock Hoes:
Regular Weight.....₩ doz. $4.50
Junior Size.....₩ doz. $4.00
Ft. Madison Sprouting Hoe, ₩ doz. $4.80
Ft. Madison Dixie Tobacco Hoe..75&20%
Kretsinger's Cut Easy, per doz....75&2%
Warren Hoe.....60%
W. & C. Ivanhoe.....75&2%
B. B. Cultivator Hoe.....75&10%
Acme Weeding.....75&10%
W. & C. Lightning Shuffle Hoe, ₩ doz. $5.50

Hog Rings and Ringers—See *Rings and Ringers.*

Hoisting Apparatus—See *Machines, Hoisting.*

Hollow Ware—See *Ware, Hollow.*

Holders—

Bit—

Angular, ₩ doz. $24.00.....45&10%

File and Tool—

C. E. Jennings & Co. Model Tool Holders.....33⅓%
Nicholson File Holders and File Handles.....33⅓%

Hooks—

Cast Iron—

Bird Cage, Reading..... } .50&10@60%
Bird Cage, Sargent's List... }
Clothes Line, Sargent's List.....50&10%&10%
Ceiling, Sargent's List.....40&10%
Clothes Line, Stowell's.....70%
Clothes Line, Reading List 65&10@65&10&10%
Coat and Hat, Stowell's.....70%
Coat and Hat, Reading.....70@75%
Coat and Hat, Sargent's List.....45&10%
Coat and Hat, Wrightsville.....65&10%
Harness, Reading List.....70&10@75%

Wire—

Belt.....80%
Atlas, Coat and Hat:
Single Cases.....45%
10 Case Lots.....45&10%
Czar Harness.....50&10&5%
Wire Coat and Hat:
Acme.....50&10&5%
B. B.....50&10&5%
V Brace, Chief and Czar.....50&10&5%
Gem.....60%
Bright Wire Goods—See *Wire.*

Wrought Iron—

Box, 6 in., per doz. $1.50; 8 in., $1.75; 10 in., $2.00.
Cotton..... doz. $1.05@1.25
Wrought Staples, Hooks, &c.—See *Wrought Goods.*

Miscellaneous—

Bush, Light, doz. $5.50; Medium, $6.00; Heavy, $6.50

Grass.....Nos.	*1*	*2*	*3*	*4*
Best.....	*$1.50*	*1.75*	*2.00*	
Common.....	*$1.40*	*1.40*	*1.50*	*1.75*

Potato and Manure 70%
Whiffletree.....15, 4½c
Hooks and Eyes:
Brass.....60c&10c&10@70%
Malleable Iron .....70c&50c&10c&10%
Covert Saddlery Works' Self Locking Gate and Door Hook.....60&10%
Crown Picture.....50&10%
Bench Hooks—See *Bench Stops.*
Corn Hooks—See *Knives, Corn.*

Horse Nails—See *Nails, Horse*

Horseshoes—See *Shoes, Horse.*

Hose Rubber—

Garden Hose, ¾-inch:

Competition.....ft.	*4¼@*	*4¾c*
3-ply Standard .....ft.	*5 @*	*6 c*
4-ply Standard.....ft.	*8 @*	*9 c*
5-ply extra .....ft.	*9 @*	*10 c*
4-ply extra .....ft	*11 @*	*12 c*

Cotton Garden, ¾-in., coupled:

Low Grade .....ft.	*6 @*	*7 c*
Fair quality.....ft.	*8 @*	*9 c*

Irons—Sad—

From 4 to 10.....lb 3@3¼c
B. B. Sad Irons.....lb. 3½@4c
Chinese Laundry.....lb. 5@5½c
Chinese Sad.....lb. 3½@3¾c
Mrs. Potts', per set:

Nos. 50	*55*	*60*	*65*
67@72c	*65@69c*	*77@82c*	*74@79c*

New England Pressing, lb.. 3½@3¾c

Soldering—

Soldering Coppers. 1 & 1½ lb., 21@23c.; 2 lb., 19@21c
Covert Mfg. Co.....20&2%

Pinking—

Pinking Irons.....doz. 50@60c

Jack Screws—See *Screws.*

Jacks, Wagon—

Covert Mfg. Co., Steel.....45&2%
Daisy.....70%
Lockport.....40@40&10%
Victor.....60%
Lane's Steel.....33⅓&5%

Kettles—

Brass, Spun, Plain..... 20@25%
Enameled and Cast Iron—See *Ware, Hollow.*

Knife Sharpeners—See *Sharpeners, Knife.*

Knives—

Butcher, Shoe, &c.—

Dick's Butcher Knives.....40%
Foster Bros.' Butcher, &c.....30%
Hay and Straw—See *Hay Knives.*

Corn—

Ft. Madison Cut-Easy, ₩ doz.....$3.25
Withington Acme, ₩ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

Drawing—

Standard List.....70&5@70&10%
Adjustable Handle.....25@33⅓%
Bradley's.....35%
C. E. Jennings & Co. Nos. 45, 46..40&10%
Jennings & Griffin.....60%&5%
Swan's.....70&10&2½%
Watrous.....30&10@40%
L. & I. J. White.....20&5&25%
Cantelo's Folding.....50@50&5%

Hay and Straw—

Lightning Pattern....per doz. $6.00@6.75
Iwan's Sickle Edge.....₩ doz. $11.50
Lightning.....$7.50
Maine.....₩ doz. $8.50

Mincing—

Buffalo.....₩ gro. $15.00

Miscellaneous—

Farriers'.....doz. $2.00@3.00
Westenholm's.....₩ doz. $3.00@3.25

Knobs—

Base, 2¼-inch, Birch, or Maple. Rubber tip, gro .....$1.25@1.50
Carriage, Jap, all sizes..gro. 30@33c
Door, Mineral.....doz. 60@65c
Door, Por. Jap'd.....doz. 70@75c
Door, Por. Nickel....doz. $2.00@2.10
Bardsley's Wood Door, Shutter, &c...15%
Picture, Sargent's.....60&10%
Snow's Victor.....50&10%

Ladders, Step—

Handy Ladder Works:

Length.	Extended Length. Feet.	Shipped Ready for Use. Per doz.	Shipped K. D., Per doz.
4	7	$16.00	$14.00
5	9	19.50	17.00
6	11	24 50	21.00
7	13	29.50	25.00
8	15	34.00	29.00
9	17	39.00	32.00
10	19	43.00	35 00
11	21	46.50	40.00
12	23	51.00	45.00

Ladles—

Melting—

L. & G. Mfg. Co. 60%
P., S. & W. ..... 40@40&10%
Reading ..... 50&10%
Sargent's ..... 40@40&10%

Lanterns—

Tubular—

Regular Tubular ..... doz. $4.50@5.60
Side Lift Tubular ..... doz. $4.75@5.25
Square Lift Tubular ..... doz. $4.75@5.25
Other Styles ..... 40&10@40&10&5%

Bull's Eye Police—

No. 1, 2¾ inch $3.60
No. 2, 3 inch $4.00

Latches, Thumb—

Roggin's Latches ..... doz. 32@33c

Lawn Mowers—

See *Mowers, Lawn.*

Leaders, Cattle—

Small ..... doz. 50c; *large*, 55c
Covert Mfg. Co. ..... 45&2%

Lemon Squeezers—

See *Squeezers, Lemon.*

Lifters, Transom—

Dickson:
3 x 4 ft. x ¼ ..... ₩ 100 $11.00
Other sizes, Iron ..... 70&10%
Other sizes, Brass and Bronze 70%
R. & E. 45%

Lines—

Wire Clothes, Nos...	*18*	*19*	*20*
100 feet	$2.20	3.00	1.65
75 feet	$1.80	1.70	1.30

Cassawan Mills.
Crown Solid Braided Chalk ..... 33⅓&5
Mason's, No. 0 to No. 5 ..... 33⅓&5
Samson Cordage Works:
Solid Braided Chalk, No. 0 to 3 ..... 10%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₩ gr. 30%

Locks—

Cabinet—

Cabinet Locks ..... 33⅓@33⅓&7½%

Door Locks, Latches, &c.—

[Net prices are very often made on these goods.]

Reading Hardware Co. 40%
R. & E. Mfg. Co. 60%
Sargent & Co. ..... 40@40&10%
Snow's Victor ..... 50&10%

Elevator—

Stowell's ..... 33⅓&5

Padlocks—

Wrought Iron ..... 75&10@80%
R. & E. Mfg. Co. Wrt. Steel and Brass. 50%

Sash, &c.—

Fitch's Bronze and Brass ..... 66⅔&5
Fitch's Iron 70%
Ives' Patent ..... 55&5@65%
Reading ..... 60&10&10@70%

Machines—

Boring—

Without Augers.

	Upright.	Angular.
Improved No. 3	$4.25	No. 1 $5.00
Improved No. 4	3.75	No. 2. 3.38
Improved No. 5	2.75	
Jennings'	2.50	3.00
Millers' Falls		5.75
Snell's, Rice's Pat.	2.50	2.75
Swan's, No. 500	5.10	No. 200 6.45

Hoisting—

Moore's Anti-Friction Differential Pulley Block 30%
Moore's Hand Hoist, with Look Brake. 20%

Ice Cutting—

Chandler's 15%

Washing—

Carload lots 10% off, freight allowed.

Wayne American, ₩ doz.	$28.00
Western Star, No. 2, ₩ doz.	28.00
Western Star, No. 3, ₩ doz.	30.00
St. Louis, No. 41, ₩ doz.	60.00

Mallets—

Hickory ..... 45&5@50&5%
Lignumvitæ ..... 45&5@50&5%
Tinners', Hickory and Applewood, doz ..... 50@55c

Mats—

Door—

Elastic Steel (W. G. Co.) 10%

Mattocks—

See *Picks and Mattocks.*

Meat Cutters—

See *Cutters, Meat.*

Milk Cans—

See *Cans, Milk.*

Mills—

Coffee—

Enterprise Mfg. Co. ..... 25@30%
National, list Jan. 1, '94 ..... 30%
Parker's Columbia and Victor ..... 50&10@60%
Parker's Box and Side ..... 50&10@60%
Swift, Lane Bros. 30%

Mincing Knives—

See *Knives, Mincing.*

Molasses Gates—

See *Gates, Molasses.*

Money Drawers—

See *Drawers, Money.*

Mowers, Lawn—

Net prices are generally quoted.
Cheap ..... *all sizes, $2.00@2.10*
Good ..... *all sizes, $2.50@2.75*

	10-	*12*	*14*	*16-inch*
High Grade	*4.25*	*4.50*	*4.75*	*5.00*

Pennsylvania and Continental. 60&10&5%
Quaker City ..... 70&5%
Great American ..... 70&5%
Philadelphia:
Style M., S., C., K., T. ..... 70&5%
Style A, all Steel ..... 50&10%
Style E, Low Wheel ..... 60&10%
Style E, High Wheel ..... 70&10&5%
Drexel and Gold Coin, low list ... 50&5%

Nails—

Cut and Wire. See Trade Report.
Wire Nails and Brads, Papered. List July 20, 1899 ..... 85@85&10%
Hungarian, Finishing, Upholsterers', &c. See Tacks

Horse—

Nos.	6	7	8	9	10	
A. C.	25c	23c	22c	21c	21c	40&5%
Ausable	26c	26c	25c	24c	23c	50&10%
Capewell	19c	18c	17c	16c	16c	10&5%
C. B. K.	25c	25c	22c	21c	21c	40%
Champ'in	28c	26c	25c	24c	23c	40&5&2%
Clinto	19c	17c	16c	15c	14c	30&10&5%
Maud S.	25c	23c	22c	21c	21c	50%
Neponset	23c	21c	20c	19c	18c	40%
Putnam	23c	21c	20c	19c	18c	33⅓%
Vulcan	23c	21c	20c	19c	18c	25&10%
American, Nos. to 10						9@9½c

Picture

	1¼	2	2½	3	3½ in.
Brass Head	.55	.60	.70	.95	1.00 gro.
Por. Head	1.10	1.10	1.10	..	gro.

Nippers, See *Pliers and Nippers.*

Nut Crackers—

See *Crackers, Nut.*

Nuts—

List Feb. 1, '99.
Cold Punched ..... *Off*
Mfrs. or U. S. Standard. ..... *list.*
Hexagon, plain ..... 5.80@5.90c
Square, plain ..... 5.40@5.50c
Square, C. T. & R. ..... 5.60@5.70c
Hexagon, C. T. & R. ..... 6.40@6.50c
Hot Pressed:
Mfrs., U. S. or Nar. Gauge Stan'd.
Square Blank or Tapped ..... 5.80@5.90c
Hexagon Blank or Tap'd ..... 5.80@6.00c

Oakum—

Best or Government ..... *lb.* 6¼c
Navy ..... *lb.* 5 c
U. S. Navy ..... *lb.* 5¼c
Plumbers' Spun Navy 2¾c
In carload lots ¼c lb. off f.o.b. New York.

Oil, Axle—

Snow Flake: 33⅓&10%
1 pt. cans, per doz. $3.00
1 qt. cans, per doz $4.80
1 gal. cans, per doz. $15 00
5 gal. cans, per doz. $66.00

Oil Tanks—See *Tanks, Oil.*

Oilers—

Brass and Copper ..... 40&10@50%
Tin or Steel ..... 60&10@65%
Zinc ..... 60&10@65%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4; No. 3, $4.40 ₩ doz. 20%
Malleable, Hammers' Old Pattern, same list ..... 50&10%
Wilmot & Hobbs Mfg. Co:
Spring Bottom Cans ..... 70@70&10%
Railroad Oilers etc, ... 60@60&10%

Oponers—

Can—

French ..... doz. 35c
Iron Handle ..... doz. 25@27c
Sprague, Iron Hdle ..... per doz. 35@40c
Sardine Scissors ..... doz. $1.75@3.00
Tip Top ..... per doz. $0.75
National, ₩ gro. ..... $1.75@2.00
Stowell's ..... per doz. 40@45c
Waldorf, ₩ gro. $9.00

Egg—

Nickel Plate ..... per doz., $2.00
Silver Plate ..... per doz., $4.00

Packing—

Rubber—

Standard, fair quality ..... 70&10@75%
Inferior quality ..... 75&10@80%
Extra ..... 60&5@60&10&5%
Jenkins' Standard, ₩ lb 80c ..... 25@25&5%

Miscellaneous—

American Packing ..... 9@10c lb.
Cotton Packing ..... 13@14c lb.
Italian Packing ..... 10½@11¼c lb.
Jute ..... 3½@5c lb.
Russia Packing ..... 12@13c lb.

Pails—

Creamery—

S. S. & Co., with gauges.. No 1 $6.50; No. 2, $6.75 ₩ doz.

Galvanized—

Price per gro.

Inch	*10*	*12*	*14*
Water, Regular	18.00	21.00	24.00
Water, Heavy	22.00	25.50	28.00
Fire, Rd. Bottom	31.00	33.00	35.00
Well	27.00	29.00	31.00

Pans—

Dripping—

Standard List ..... 65&10@65%

Fry—

Common Lipped:

No.	*1*	*2*	*3*	*4*	*5*
Per doz.	*$0.90*	*.75*	*.85*	*.95*	*1.15*

Roasting and Baking—

Regal, S. S. & Co., ₩ doz., Nos. 5, $4.50; 10 $5.00; 20 $5.50; 30, $6.00.
Simplex, ₩ gro., No. 40 $30.00; 50, $34.50; 60, $39 00; 140, $33.00; 150, $37 50; 160, $43.00.

Paper—

Building Paper—

	Per roll
Rosin Sized Sheathing:	*500 sq. ft.*
Light wt., 20 sq. ft. to lb.	$0 40@0.45
Medium wt., 12 sq. ft. to lb	$0.60@0.65
Heavy wt., extra quality	$0.95@1.05
Medium Grades Water Proof Sheathing	$0.80@1.25
Deafening Felt, 9, 6 and 4½ sq. ft. to lb., ton	$40.00
York Haven Waterproof Sheathing	$1 35@1.75

Tarred Paper.

1 ply (roll 300 sq ft.), ton $28 00
2 ply, roll 100 sq. ft. ..... 50@55c
3 ply, roll 100 sq. ft ..... 75@80c

Sand and Emery—

List Dec. 23, 1899 ..... 50&10@50&10&10%

Parers—

Apple—

Advance	₩ doz.	$4.50
Baldwin	₩ doz.	$5.00
Bonanza	each	$5.00
Dandy	each	$7.50
Eureka, 1898	each	$16.00
Family Bay State	₩ doz.	$12.00
Hudson's Little Star	₩ doz.	$4.00
Hudson's Rocking Table	₩ doz.	$5.50
Improved Bay State	₩ doz.	$27.00@30.00
New Lightning	₩ doz.	$5.50
Reading 72	₩ doz.	$4.00
Reading 78	₩ doz.	$7.00
Turn Table '98	₩ doz.	$5.50
White Mountain	₩ doz.	$4.00

Potato—

Saratoga	₩ doz.	$5.50
White Mountain	₩ doz.	$4.50

Paris Green— *per lb.*

In Arsenic, kegs or casks 12½c
In kegs, 100 to 175 lbs. ..... 13 c
In kits, 14, 28, 56 lbs ..... 14 c
In paper boxes, 2 to 5 lbs ..... 14 c
In paper boxes, 1 lb 14½c
In paper boxes, ½ lb 15½c
In paper boxes, ¼ lb 16½c

Picks and Mattocks—

List Feb 23, 1899 ..... 75@75&10%

Pinking Irons—

See *Irons, Pinking.*

Pins—

Escutcheon—

Brass ..... 60&10%
Iron, list Nov. 11, '85 ..... 60&10%

Pipe, Cast Iron Soil—

Factory Shipments.

Standard, 2-6 in. ..... 70@70&5%
Extra Heavy, 2-6 in. ..... 75@75&5%
Fittings ..... 75&10&5@80%

NOTE.—*Freight allowances on Carload oils.*

Pipe, Merchant, Boiler Tubes, &c.—

Carloads to Consumers.

Merchant Pipe.

	Black.	*Galvanized.*
⅛ to ½ inch	61%	48%
¾ to 10 inch	68½%	56%

Boiler Tubes.

Steel.	*Up to 22 feet.*	*22 feet and over.*
1 to 1¼ inch and 2¼ in.	49½%	44½%
1¾ to 2¼ inch	45%	39½%
2¾ to 13 inch	57%	52½%
Iron.		
1 to 1¼ inch and 2¼ in.	49½%	44½%
1¾ to 2¼ inch	45%	39½%
2¾ to 13 inch	57%	52½%
Casing, Cut Lengths.		*S. & S.*
2 to 8 inch		58%
3¼ to 4 inch		65%
4½ to 12½ inch		65%

NOTE.—*The old list is still used by some jobbers, and net prices are often quoted.*

Planes and Plane Irons—

Wood Planes—

Molding ..... 40&2½@40&10%
Bench, First quality ..... 45&10@45&10&5%
Bench, Second quality ..... 50&10@50&10&5%
Bailey's (Stanley R. & L. Co) ..... 50&10@50&10&10%
Gage Self Setting 35%

Iron Planes—

Bailey's (Stanley R. & L. Co) ..... 50&10@50&10&10%
Chaplin's Iron Planes ..... 50&10%
Miscellaneous Planes (Stanley R. & L. Co.) ..... 25&10@25&10&10%
Sargent's ..... 50&10&10%

Plane Irons—

Wood Bench Plane Irons ..... 50&5@50&10&5%
Buck Bros. 30%
Butcher's ..... $5.00@5.25 to 2
Stanley R. & L. Co ..... 50&10@50&10&10%
L. & I. J. White ..... 20&5@25%

Planters, Corn, Hand.

Kohler's Eclipse ..... ₩ doz. $0.00

Plates—

Felloe ..... *lb* 3¾@4c
Self-Sealing Pie Plates (S. S. & Co.), ₩ doz. $2.00 ..... 30%

Pliers and Nippers—

Button Pliers ..... 70@70&10&5%
Gas Burner, per doz., 5 in., $1.15@ $1.20; 6 in., $1.35@$1.45.

Gas Pipe..	*7*	*8*	*10*	*12-in.*
	$1.75	*$2.00*	*$2.75*	*$3.75*

Acme Nippers ..... 40@40&5%
Bernard's:
Parallel Pliers, &c 35%
Paragon Pliers ..... 50&5%
Lodi Pliers ..... 50&5%
Elm City Fence Pliers 35%
Cronk Hanger Co.:
Cronk's 60%
Improved Button ..... 70&5%
Stub's 50%
Combination and others 25%
Heller's Farriers' Nippers, Pincers, and Tools 50@50&5%
Morrill's Parallel, ₩ doz. $12.00 ..... 30&5%
P., S. & W. Cast Steel ..... 30&10@40%
P., S. & W. Tinners' Cutting Nippers, 40@40&5%
Swedish Side, End and Diagonal Cutting Pliers 50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds 40%

Plumbs and Levels—

Plumbs and Levels ..... 70&10@75&5%
Davis Iron, Machinist Nos. 1 to 14 ..... 30%
Davis Iron, Adjustable Nos. 6 to 49 ..... 35%
Disston's 70%
Pocket Levels ..... 75&10&10@75&10%
Stanley R. & L. Co. ..... 70&10@70&10&10%
Stanley's Duplex ..... 25&10@25&10&10%
Woods' Extension ..... 33⅓&5

Poachers, Egg—

Buffalo Steam Egg Poachers, ₩ doz., No. 1, $7.20; No. 2, $11.00 No. 3, $11.00; No. 4, $14.50 ..... 50%

Points, Glaziers'—

Bulk and 1 lb. papers ..... *lb.* 9½@10 c
½-lb. papers ..... *lb.* 10 @10¼c
¼-lb. papers ..... *lb.* 10½@11 c

Pokes, Animal—

Ft. Madison Hawkeye ..... ₩ doz. $3.25
Ft. Madison, Western ..... ₩ doz. $3.75

Police Goods—

Manufacturers' Lists ..... 25@25&5%
Tower's 25%

Polish—Metal—

Prestoline Liquid, No. 1 (½ pt.), ₩ doz. $3.00; No. 2 (1 qt.), $9.75 ..... 40%
Prestoline Paste ..... 33⅓@40%
U. S. Metal Polish Paste, 3 oz. boxes, ₩ doz. 50¢; ₩ gr. $4.50; ½ lb boxes, ₩ doz. $1.25; 1 lb boxes, ₩ doz. $2.25.
U. S. Liquid, 8 oz. cans, ₩ doz. $1.25; ₩ gr. $12.00.
Barkeepers' Friend Metal Polish, ₩ doz. $1.75; ₩ gr. $18.00.
Wynn's White Silk, ½ pt. cans, ₩ doz. $1.50

Stove—

Black Eagle Benzine Paste, 5 lb cans .. ₩ lb 10¢
Black Eagle, Liquid, ½ pt. cans. ..... ₩ doz. 75¢
Black Jack Paste, ¾ lb cans, ₩ gro. $9.00
Ladd's Black Beauty, gr. $10.00 ..... 50%
Joseph Dixon's, ₩ gr. $5.75 ..... 10%
Dixon's Plumbago ..... ₩ lb 8¢
Fireside ..... ₩ gr. $2.50
Gem, ₩ gr. $4.50 ..... 10%
Japanese ..... ₩ gr. $3.50
Jet Black ..... ₩ gr. $3.50
Peerless Iron Enamel, ¼ pt. cans ..... ₩ doz. $1.50
Wynn's Black Silk, 5 lb pail ..... each 70¢
Wynn's Black Silk, ½ lb box, ₩ doz. $1.00
Wynn's Black Silk, 5 oz. box, ₩ doz. $0.75
Wynn's Black Silk, ½ pt. liq., ₩ doz. $2.00

Poppers, Corn—

Round or Square:
1 qt ..... *gro.* $7.00@$7.50
1½ qt ..... *gro.* 9 50@ 10 00
2 qt ..... *gro.* 10.50@ 11.00

Post Hole and Tree Augers and Diggers—

See also *Diggers, Post Hole, &c.*

Potato Parers—

See *Parers, Potato.*

Pots—

Glue—

Enameled ..... 40&10@50%
Tinned ..... 40@45%

Powder—

In Canisters:
Duck, 1 lb. each 45c
Fine Sporting, 1 lb. each 75c
Rifle, ½-lb. each 15c
Rifle, 1-lb. each 25c
In Kegs:
Duck, 6½-lb. kegs $2.25
Duck, 12½-lb. kegs $4.25
Duck, 25-lb kegs $8.00
Rifle, 6½-lb. kegs $1.25
Rifle, 12½-lb kegs $2.25
Rifle, 25-lb. kegs $4.00
King's Smokeless Shot Gun and Rifle: 25&10@25&10&10%
Keg (25 lb bulk) $22.00
Half Keg (12½ lb bulk) $11.25
Quarter Keg (6¼ lb bulk) $5.75
Canister (1 lb bulk) $1.00
King's Semi-Smokeless: 25&10@25&10&10%
Keg (25 lb bulk) $16.00
Half Keg (12½ lb bulk) $8.25
Quarter Keg (6¼ lb bulk) $2.75
One Pound Can, bulk $0.50

Presses—

Fruit and Jelly—

Enterprise Mfg. Co. ..... 20@25%

Pruning Hooks and Shears—See *Shears.*

Pullers, Nail—

Crown, ₩ doz. $18.00 ..... 50%
Crown Prince, ₩ doz. $15.00 ..... 50%
Cyclops ..... 40@40&10%
Diamond B, No. 2, doz. $22.; No. 4, $11. ..... 40%
Eureka, 5 lb., doz., $16.00; 8 lb $15. ..... 40%
Giant, No. 1, ₩ doz. $18; No. 2, $16.50; No. 3, $15. ..... 40%
Miller's Falls, No. 3, per doz. $12.00. ..... 15&10%
Pelican ₩ doz. $9.00 ..... 40&10%
Scranton, No. 1 and 2, ₩ doz. $9.00
Scranton, No. 3, ₩ doz. $8.50

Pulleys—
Hay Fork, Swivel or Solid Eye..... doz. $1.50@1.75
Hay Fork, Stowell's Anti-Friction, 5-in. Wheel, ₱ doz. $12.00.....40%
Hot House, Awning, &c.....60@60&10%
Japanned Clothes Line.....60@60&10%
Japanned Screw.....70&10&10%
Japanned Side.....70&10&10%
Stowell's Ceiling or End, Anti-Friction 60%
Stowell's Dumb Waiter, Anti-Friction.....60&10%
Stowell's Electric Light.....60%
Stowell's Side, Anti-Friction.....60&10%

Sash Pulleys—
Acme.....1¾ in., 16¢; 2 in., 19¢
Common Sense, 1¾ in.... ₱ doz., 18¢; 2 in., 20¢.
Fox-All-Steel, Nos. 3 and 7, 2¼ in..... ₱ doz. 25¢
No. 9, 1¾ in..... ₱ doz. 20¢
Extra for Plated Finish.... ₱ doz. 20¢
Extra for Anti-Friction Bronze Bushing..... ₱ doz 10¢
Grand Rapids All Steel Noiseless....40%
Ideal No. 13.....1¾ in., ₱ doz., 20¢
Niagara.....1¾ in., 16¢; 2 in., 19¢
No. 26, Troy....1¾ in., 14¼¢; 2 in., 16½¢
Star.....1¾ in., 16¢; 2 in., 19¢
Tackle Blocks—See *Blocks.*

Pumps—
Cistern.....60@60&10%
Pitcher Spout.....75&5@75&10%
Pump Leathers, all sizes....gro. $6.00
Barnes Dbl. Acting (low list).....55%
Flint & Walling's Fast Mail....55@55&10%
Flint & Walling's Pitcher Spout.....75&5%
Loud's Suction Pumps, U. d. Co.....20%
Myer's Pumps, low list.....50%
Contractors' Rubber Diaphragm Non-chokable, B. & L. Block Co.....20%

Punches—
Revolving (4 tubes)...doz. $3.75@4.25
Saddlers' or Drive, good..doz. 65@70c
Spring, good quality.....$1.65@1.75
Bemis & Call Co.'s Cast Steel Drive....50%
Bemis & Call Co.'s Check.....55%
Bemis & Call Co.'s Spring.....50%
Niagara Hollow Punches.....45%
Niagara Solid Punches.....55%
Steel Screw, B & K. Mfg. Co.....40%
Tinners' Hollow, P., S. & W. Co..... 35@35&5%
Tinners' Solid, P., S. & W.Co., ₱ doz., $1.44.....55%

Rail— Barn Door, &c.—
Barn Door, Light..In. ½ ¾ ¾
100 feet.....$2.00 $2.50 $3.00
B. D., for N. E. Hangers:
Small. Med. Large.
100 feet.....$2 20 2.70 3.20
Sliding Door, Bronzed Wr't Iron, ft. 6½c
Sliding Door, Iron Painted....2½@3c
Sliding Door, Wrought Brass, 1½ in..... lb. 36c..30%
Cronk's Double Braced Steel Rail, ₱ foot.....3½¢
Cronk's O. N. T. Rail.....3½¢
Lanes' O. N. T., ₱ 100 ft., 1 inch....$2.05
Lanes' Standard, ₱ 100 ft.....3.75
Lawrence Bros.' ..... ₱ ft. 4¼¢
McKinney's None Better..... ₱ ft. 3¢
McKinney's Standard..... ₱ ft. 3¼¢
Moore's Wr't. Bracket, Steel.....3½¢
Stowell's Steel Rail, Plain.....3½¢

Rakes—
Net Prices, Malleable Rakes:

	10	12	14	16-tooth
Shank	$1.50	1.60	1.75	1.85
Socket	$1.65	1.80	1.95	2.10

Sept. 1, 1900, List:
Cast Steel.....70&5@2%
Malleable.....70&10@75&5%
Lawn Rakes, Metal Head, per doz., 20 teeth, $3.25; 24 teeth $3 50.
Fort Madison Red Head Lawn.....$3 25
Fort Madison Blue Head Lawn.....$3 00
Jackson Lawn, 29 and 30 teeth..... ₱ doz. $4.50
Kohler's Lawn Queen, 24-tooth, ₱ doz. $4.00
Kohler's Paragon, 24-tooth, ₱ doz. $3.00
Kohler's Steel Garden, 14-tooth, ₱ doz. $3.50
Kohler's Malleable Garden, 14-tooth, ₱ doz.....$2.50

Rasps, Horse—
Disston's.....75%
Heller Bros.....60&10&10%
McCaffrey File Co. Horse Rasps..... 60&10&5%
New Nicholson Horse Rasp.....70&10%
See also *Files.*

Razors—
Fox Razors, No. 42... ₱ doz. $20.00
Fox Razors, No 44... ₱ doz. $24.00
Fox Razors, No. 89, Platina, ₱ doz $24.00
} disc. 40%
Sterling Razor Works.....50%

Razor Strops—
See *Strops, Razor.*

Reels— Fishing—
Hendryx Aluminum, German Silver, Gold, Bronze, Silver, Rubber, Populo and Salmon, Single Action, Multiplying and Quadruple, all sizes..... 25%
Hendryx Single Action Series, 102P and PN, 202P and PN, 102 PR and PRN, 202 PR and PRN, 304 P and PN, 00304P and PN, 502 and 502N, 802 and 802N, 02084N, Competitor.50%
Hendryx Multiplying and Quadruple Series, 3004N and PN, 4N and PN, 2904N, 2904P and PN, 002904PN, 0924 and 0924N, 5009N and PN.....40&10%
Shakespeare, Style C..... 25%

Registers—
Black Jap.....50&10@60%
White Jap.....40%
Bronzed.....40%
Nickel Plated.....50%
Electro Plated.....40%

Riddles, Grain or Sand—
16 in. per doz.....$2.00@2 25
17 in. per doz.....$2.25@2.50
in. per doz.....$2.50@2.75

Rings and Ringers—
Bull Rings—

	2	2½	3 Inch.
Steel	$0.80	0.90	0.99 doz.
Copper	1.10	1.30	1.50 doz.

Hog Rings and Ringers—
Hill's Rings....gro. boxes, $4.50@4.75
Hill's Ringers, Gray Iron..doz. 55@60c
Hill's Ringers, Mal. Iron, ₱ doz.....75@90c
Blair's Rings..... ₱ gr. $5.75@6.00
Blair's Ringers..... ₱ doz. $0.90@1.00
Brown's Rings..... ₱ gro. $6.00@6.25
Brown's Ringers..... ₱ doz. $1.00@1.10
Perfect Rings..... ₱ gro. $9.00@9.50
Perfect Ringers, ₱ doz.....$1.25@1.35
Rapid Rings..... ₱ gro. $6.00
Rapid Ringers..... ₱ doz. $0.50

Rivets and Burrs—
Copper.....50@50&5%
Iron or Steel:
Tinners'.....70&10@75%
Miscellaneous.....70&10@75%

Rivet Sets—See *Sets.*

Roasting and Baking Pans—See *Pans, Roasting and Baking.*

Rollers—
Acme, Stowell's Anti-Friction.....50%
Barn Door, Sargent's list.....50&10&10%
Cronk's Stay..... 66⅔%
Cronk's Brinkerhoff..... 66⅔
Lane's, Stay..... 33⅓%
Stowell's Barn Door Stay... ₱ doz. $1.25

Rope—
Manila, 7-16 in. and larger. lb. 9¾@10 c
Manila.....¾-inch lb. 10¼@10½c
Manila, ¼ and 5-16 in. lb. 10¼@11 c
Manila, Tarred Rope, 15 thread..... lb 9¼@ 10 c
Manila Hay Rope Med'm. lb 9¼@ 10 c
Sisal, 7-16 in. and larger lb. 7¼@ 7½c
Sisal.....⅜-inch. lb. 7¾@ 8 c
Sisal.....¼ and 5-16 in. lb. 8¼@ 8½c
Sisal, Hay Rope, 2 to 10 ply..... lb. 7½@ 7¾c
Sisal, Tarred, Medium Lath Yarn..... lb. 6¾@ 7 c
Cotton Rope:
Best, ¼-in. and larger..lb... @14 c
Med'm, ¼-in. and larger lb... @11½c
Com., ¼-in. and larger. lb... @ 9 c
Jute Rope, No. 1, ¼ in. and up..... lb... @ 6½c
Jute Rope, No. 2, ¼ in. and up..... lb .. @ 6 c

Wire Rope—
Galvanized .....25&10&2%
Plain.....30&10&2%

Ropes, Hammock—
Covert Mfg. Co.....45&2%
Covert Saddlery Works.....60%

Rules—
Boxwood..75&10&10&10&10&75&10&10&10&10&5%
Ivory ...40&10&10@40&10&10&10&10&10%
Lufkin's Steel.....50&10%
Lufkin's Lumber ..... 50&10%
Stanley R. & L. Co.:
Boxwood...75&10&10@75&10&10&10%
Ivory..... ....35&10@35&10&10%

Sad Irons—See *Irons, Sad.*

Sand and Emery Paper and Cloth—
See *Paper and Cloth.*

Sash Cords—See *Cord, Sash.*

Sash Locks—See *Locks, Sash.*

Sash Weights—
See *Weights, Sash.*

Sausage Stuffers or Fillers—See *Stuffers or Fillers, Sausage.*

Saw Frames—
See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Saws—
Atkins' Circular..... 50@50&10%
Atkins' Band.....50&10.@50%
Atkins' Cross Cuts..... 35&5%
Atkins' Mulay, Mill and Drag.....50&10%
Atkins' One-Man Saw..... 40%
Atkins' Wood Saws..... 40%
Atkins' Hand, Compass, &c..... 40%
Disston's Circular Solid and Inserted Tooth.....50%
Disston Band 2 to 14 in. wide.....60%
Disston Band ¼ to 1¾.....70%
Disston Crosscuts.....45@45&10%
Disston Narrow Crosscuts...50@50&10%
Disston Mulay, Mill and Drag.....50%
Disston Framed Woodsaws..35@35&7½%
Disston Woodsaw Blades....40@40&7½%
Disston Woodsaw Rods..... 25%
Disston Handsaws, Nos. 12, 99, 9, 16, d100, D8, 120, 79, 77, 8.....25@25&7½%
Disston Hand Saws, Nos 7, 107, 107½, 3, 1, 0, 00, Combination... 30@30&7½%
Disston Compass Keyhole, &c.25@25&7½%
Disston Butcher Saws and Blades..... 35@35&7½%
C. E. Jennings & Co.'s.:
Back Saws.....25%
Butcher Saws.....35%
Compass and Key Hole Saws.....25%
Framed Wood Saws.....40%
Hand Saws.....25@30%
Wood Saw Blades..... 45%
Peace Circular and Mill.....50%
Peace Cross Cuts, list Jan. 1, '99.....50%
Pence Hand, Panel and Rip.....30%
Richardson's Circular and Mill.....50%
Richardson's X Cuts, list Jan. 1, '99..50%
Richardson's Hand, &c.....30%
Simonds' Circular Saws.....50%
Simonds' Crescent Ground Cross Cut Saws.....35%
Simonds' One-Man Cross Cuts.....40&10%
Simonds' Gang Mill, Mulay and Drag Saws.....45@45&5%

Hack Saws—
Disston Concave Blades.....25%
Disston Keystone.....30%
Disston Hack Saw Frames.....30%
C. E. Jennings & Co's:
Hack Saw Frames, Nos. 175, 180, 330.....40%
Hack Saws, Nos. 175, 180, 330, complete.....40%
Griffin's Hack Saw Frames 45%
Griffin's Hack Saw Blades..... 45%
Star Hack Saws and Blades.....15&10%

Scroll—
Barnes' No. 7, $15.....25%
Barnes' Scroll Saw Blades.....40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20.....30%
Lester, complete, $10.00.....15&10%
Rogers, complete, $4.00.....15&10%

Scale Beams—
See *Beams, Scale.*

Scales—
Family, Turnbull's.... ...30@30&10%
Hatch, Counter:
Platform, 4 lb. by ½ oz...doz. $5.75
Two Platforms, 8 lb. by ½ oz..... doz. $16.00
Union Platform, Plain....$1.75@2.00
Union Platform, Striped...$1 85@2.15
Chatillon's Eureka.....25%
Chatillon's Favorite.....40%
Chatillon's Grocers' Trip Scales.....50%
Pelouze Scales—Household, Counter, Confectionery, Postal, Ice, &c.....50%
"The Standard" Portables.....40%
"The Standard" R. R. and Wagon....50%

Scrapers—
Box, 1 Handle .....doz $2.25@2.75
Box, 2 Handle.....doz. $3.75@4.00
Ship, No. 1, doz. $3.50; No 2, $2.25@2.40
Adjustable Box Scraper (S. R. & L. Co.) $8.00.....30&10%

Screens, Window and Frames—
Bonanza Window Screens.....60@60&5%
Flyer Pattern Window Screen.60@60&5%
Maine Window Screen Frames.40&10&5%
Perfection Window Screens.....60@60&5%
Phillips' Window Screen Frames..... 60&10&5%
Porter's Extension Window Screens..... 50&10%
Wabash Spring Adj. Screen. 50%

Screw Drivers—
See *Drivers, Screw.*

Screws—
Bench and Hand—
Bench, Iron..doz. 1 in., $3.00@3.25; 1¼, $3.50@3.75; 1¼, $4.00@4.50
Bench, Wood, Beech..doz. $3.50@3.75
Hand, Wood.....30&10@40%
Hand, R. Bliss Mfg Co.....35%

Coach, Lag and Hand Rail—
Lag, Common Point, list Oct. 1, '99..... 80@...%
Coach and Lag, Gimlet Point, list Oct. 1, '99.....75&15@...%
Hand Rail, list Jan. 1, '81.60&10@...%

Jack Screws—
Millers Falls.....50&10&10%
Millers Falls, Roller .....50&10%
P., S. & W.....40&5@40&10%
Sargent.....70&10%

Machine—
List Jan. 1, '98.
Flat or Round Head, Iron.50@50&10%
Flat or Round Head, Brass..... 50@50&10%

Set and Cap—
Set (Iron or Steel) .....70&10%
Sq. Hd. Cap..... .....65&10%
Hex. Hd. Cap.....65&10%

Wood—
List Jan. 1, 1900.
Flat Head, Iron. 85c
Round Head, Iron.....85c
Flat Head, Brass.....82½c
Round Head, Brass.....77½c
Flat Head, Bronze.....75c
Round Head, Bronze....73½c
Drive Screws .....
} Extra 10&5 @ ₱ M.

Scroll Saws—See *Saws, Scroll.*

Scythes—
Grass Scythes:
Natural Finish..per doz. $7.50@7 75
Pol. Blade.....per doz. $8.00@8.15
Painted or Bronzed..per doz. $8.00
Weed and Bush..per doz. $7.25@7.50

Scythe Snaths—
See *Snaths, Scythe.*

Seeders—
Raisin—
Enterprise..... .....25@30%

Sets—
Awl and Tool—
Brad Awl and Tool Sets:
Wood Hdle., 10 Awls doz. $2.00@2.25
Wood Hdle., 14 Awls, 6 Tools.... doz. $2.50@2.60
Aiken's Sets, Awl and Tools:
No. 20, ₱ doz. $10.00.....50&10&10%
Fray's Adj. Tool H dls...Nos. 1, $12; 2, $18; 3, $12; 4, $9; 5, $7.....50%
Millers Falls Adj. Tool H'dls, No. 1, $12; No. 4, $12; No. 5, $18 .... 15&10%
Stanley's Excelsior:
No. 1, $7.50; No. 2 $4.00; No. 3, $5.50..... .....30&10@30&10&10%

Garden Tool Sets—
Ft. Madison Rakes, Shovel and Hoe.... ₱ doz.....$9.00

Nail—
Square.....per gro. $2 50
Round, Blk. and Pol., assorted..... gro. $1.80@2.50
Octagon.....gro. $4.25@4.75
Knurled, Good.....gro. $5.00@5.50
Buck Brothers.....37½%
Cannon's Diamond Point, ₱ gr. $12...25%
Snell's Corrugated, Cup Pt.....50%
Snell's Knurled, Cup Pt..... ....66⅔%

Rivet—
Regular list.....70@70&10&5%

Saw—
Aiken's Genuine..... ₱ doz. $5.50@6.00
Aiken's Imitation ..... ₱ doz. $3.00@3.10
Atkin's Criterion.....40%
Atkin's Adjustable.....40%
Bemis & Call Co.'s Cross Cut..... .30%
Bemis & Call Co.'s Plate.....20%
Bemis & Call Spring Hammer.....30%
Disston's Star and Monarch.....25%
Hammer, Bemis & Call Co.'s new Pat. 45%
Morrill's No. 1, $15.00.....40&20%
Nos. 3 and 4, Cross Cut, $23.00.40&20%
No. 5, Mill, $31.00.....40&20%
No. 10, $15.50.....40&20%
No. 11, $16.00.....40&20%
Taintor Positive, ₱ doz. $18.....60%

Sharpeners Knife—
Chicago Wheel & Mfg. Co.....60@65%
Smith & Hemenway Co.....70&5%
Tanite Mills ₱ gross, $14.40...35@33⅓%

Sharpeners, Skate—
Eureka Skate Sharpener..... ₱ doz. $2.00

Shaves Spoke—
Iron.....doz. $1 00@1 25
Wood.....doz. $1.75@2.25
Bailey's (Stanley R. & L. Co.).....50&10%
Goodell's, ₱ doz. $9.00.....15&10%

Shears—

Cast Iron...	7	8	9 in.
Best	$16.00	18.00	20.00 gro.
Good	$13.00	15.00	17 00 gro.
Cheap	$5.00	6.00	7.00 gro.

Straight Trimmers, &c.:
Best quality, Jap..60&10&10@70&5%
" Nickel.....60@60&5%
Fair qual. Jap.....75&10@80%
" Nickel.....70&10@75%
Tailors' Shears.....40@40&10%
Acme Cast Shears.....40@40&5%
Heinisch's Tailors' Shears.....40@40&5%
Wilkinson's Hedge.....50%
Wilkinson's Sheep.....1900 list, 50%

Tinners' Snips—
Forged Handles, Steel Blades..30&10%
Malleable Handles, Laid with Steel. 40%
Forged Handles, Steel Blades, Berlin.. 40&10%
Jennings & Griffin Mfg. Co's. 7 to 10 inch.....50%
Niagara Snips.....40%

Pruning Shears and Tools—
Cronk's Pruning Shears.....33⅓%
Disston's Combined Pruning Hook and Saw, ₱ doz. $18.00.....25@25&10%
Disston's Pruning Hook, ₱ doz. $12.00 25@25&10%
John T. Henry Mfg. Company's Pruning Shears, all grades.....50&5%
Orange Shears.....50&30%
Grape.....50&10%
Tree Pruners.....75%
Nagley's Pruning Shears.....10&5%
P., S. & W. Co.....33⅓@33⅓&10%

Sheaves—Sliding Door—
Stowell's Anti-Friction.....50%
Patent Roller Hatfield's, Sargent's list, 80&10@80&10&7½%
Reading..... .....70&10@75%
R. & E. list..... .....33⅓%
Wrightsville, Hatfield Pattern.....80%

Sliding Shutter—
Reading list.....70&10@75%
R. & E. list.....33⅓%
Sargent's list.....50&10⅔&10%

Shells—
Shells, Empty—
Brass Shells, Empty:
First quality, all gauges.....60&5%
Climax, Club, Rival, 10 and 12 gauge.. 65&5%
Paper Shells, Empty:
Acme, Ideal, Leader, New Rapid, 8 nickel-ess 10, 12, 16 and 20 gauge. 33⅓&10%
Blue Rival, New Climax, Primrose Club, Yellow Rival, 10, 12, 16 and 20 gauge.....15%
Climax, Club, League, Rival, 14, 16 and 20 gauge ($7.50 list).....20&5%
Climax, Club, League, Rival, 10 and 12 gauge.....25&5%
Defiance, High Base, New Victor, Nitro, Repeater, 10, 12, 16 and 20 gauge.....15%
Trap and Metal Lined, 10, 12, 16 and 20 gauge.....33⅓&10&5%

Shells, Loaded—
Loaded with Black Powder..... 40c&5%
Loaded with Nitro Powder..... 40c&10c&10c&5%

Shoes, Horse, Mule, &c.—
Factory Shipments.
Carloads, f. o. b., Pittsburg.....$3 50
Less than Carloads, f. o. b., Pittsburg $3.55
Steel Shoes, 25c. per keg less
Burden's, all sizes, ₱ keg..... ...$3.60

Shot—
Drop, up to B, 25-lb. bag...$1.30@1.40
Drop, up to B, 5-lb. bag 35
Buck, 25 lb. bag.... .....$1.55@1.65
Buck, 5-lb. bag 40
Chilled, 25 lb. bag..... ...$1.60@1.68
Dust Shot, 25 lb. bag.....$2.00@2.10
Dust Shot, 5-lb bag..... ... .50

Shovels and Spades—
No. 2, Polished, Sq. or Rd. Point, D or L Handle:

	A1, 1st Grade.	B2, 2d Grade
Plain Back	$10 50	$9 60
Strap Back	9.90	9 00
Cleveland Pat'n	10.20	9.30

	C3, 3d Grade.	D4, 4th Grade
Plain Back	$8.70	$8.10
Strap Back	8.10	7.50
Cleveland Pat'n	8.40	7.80

All other sizes add 30c doz. Black deduct 30c doz.
Note.—The above are the regular Association prices to small retailers, but are often shaded by jobbers $0 50@1.00, and Common, Plain Back Shovels are generally sold by jobbers at $6.75@7.00.

Shovels and Tongs—

Brass Head .....60&5@60&10%
Iron Head .....60&5@60&10%

Sieves and Sifters—

Hunter's Imitation, gro. $11.00@12.00

Buffalo Metallic Blued. S. S. & Co., ₱ gr.:

14&16	16&18	18&20
$12.90	$13.80	$15.00

Eclipse .....₱ gr. $10.00
Electric Light .....₱ gr. $12.00
Hunter's Genuine .....₱ gr. $12.50
Sh ker (Barler's Pat.) Flour Sifters.. ₱ doz., $2.00 .....30%

Sieves, Tin Rim—

Per dozen

	14	16	18	20
Inch				
Black, full size	$0 95	.98	1.00	1.10
Plated, full size	$1.05	1.08	1.10	1.20
Black, scant		$0.78	.80	.83

Sieves, Wooden Rim—

Nested, 10, 11 and 12 Inch.

Mesh 18, Nested, doz .....$0.75@0 80
Mesh 20, Nested, doz ..... .85@ .90
Mesh 24, Nested, doz ..... 1.00@1.05

Sinks—

Cast Iron—

Standard list .....60@60&10%
NOTE.—*There is not entire uniformity in lists used by jobbers.*

Wrought Steel—

Columbus Galv'd and Enameled..60&5%
Columbus, Painted 45%
L. & G. Mfg. Co., Galvanized..... 50%
L. & G. Mfg Co., Enameled..... 50%

Skeins, Wagon—

Cast Iron .....70&10@75%
Malleable Iron .....40&10@50%
Steel .....40@40&10%

Slates—

"D" Slates .....40@40&10%
Unexcelled Noiseless Slates.....
60&10&10&10@90&10&10&10&10%
Wire Bound .....35@40&5%
Double Slates, add $1 case, net.

Slaw Cutters—See *Cutters.*

Slicers, Vegetable—

Sterling $ 2.00 .....33⅓%

Snaps, Harness—

German .....40@40&10%

Covert Mfg. Co.:

Derby	35&2%
High Grade	45&2%
Jockey	40&2%
Trojan	45&2%
Yankee	35&2%
Yankee, Roller	30&2%

Covert's Saddlery Works:

Banner	60&10%
Crown	60&10%
Model	60&10%
Triumph	60&10%

W. & E. T. Fitch Co.:

Bristol	40&10%
Empire	50&5%
German	40%
National	50&5%
Perfect	45%
Clipper	50&5%
Champion	40%
Security	40%
Victor	60&5%

Oneida Community:

Solid Steel	65@65&10%
Solid Swivel	65&10@65&10&10%
Sargent's Patent Guarded	66⅔&10%

Snaths—

Scythe .....45&5%

Snips, Tinners'—See *Shears*

Soldering Irons—

See *Irons, Soldering.*

Spoke Trimmers—

See *Trimmers, Spoke.*

Spoons and Forks—

Silver Plated—

Flat Ware .....50&10@60&10%

Miscellaneous—

German Silver .....60&10%

Springs—

Door—

Gem (Coil) 20%
Star (Coil) 30%
Torrey's Rod, 39 in.... ₱ doz. $1.10@1.25
Victor (Coil) .....50&10&10%

Carriage, Wagon, &c.

Factory Shipments.

1¼ in and wider	*Blk.*	*Hf. Brt.*	*Brt.*
	4¼	4½	4¾c lb

Cliff's Bolster Springs 35%
Cliff's Seat Springs .....₱ pair 55¢

Sprinklers, Lawn—

Enterprise .....25@30%
Philadelphia No. 1, ₱ doz. $12; No. 2, $15; No. 3, $24 .....30%

Squares—

Nickel plated .....
Steel and Iron ..... } *List Jan. 5, 1900*
.....70@75%
Rosewood Hdl. Try Square and T-Bevels .....60&10&10@70%
Iron Hdl. Try Squares and T-Bevels. 40&10@40&10&10%
Disston's Try Sq. and T-Bevels.....6&10%
Winterbottom's Try and Miter.....5&10%

Squeezers—

Lemon—

Wood, Common, gro., No. 0, $5.25 @$5 50; No. 1, $6.25@$6.50.
Wood, Porcelain Lined:
Cheap .....doz. $2.00@2.75
Good Grade .....doz. $3.00@3.50
Tinned Iron .....doz. $0.75@1.25
Iron, Porcelain Lined doz. $2.90@3.25
Jennings' Star .....₱ doz. $1.85@1.90
King .....₱ doz. $2.00

Staples—

Barbed Blind .....lb. 8¼@8¼c
Electricians', Association list..75&10%
Fence Staples, same price as Barbed Wire. See Trade Report.
Poultry Netting. Staples....per lb.. 4@4¼c
Grand Crossing Tack Co.'s list....80&10%

Steels, Butchers'—

Dick's 40%
Foster Bros' 30%
C. & A. Hoffmann's 40%

Steelyards .....25@25&10%

Stocks and Dies—

Blacksmiths' .....40@40&10%
Gardner Die Stocks No. 1 .....50%
Gardner Die Stocks, larger sizes.....40%
Green River 25%
Lightning Screw Plate 25%
Little Giant 25%
Reece's New Screw Plates .....25@30%
Curtis Reversible Ratchet Die Stock.25%

Stone—

Scythe Stones—

Chicago Wheel & Mfg. Co:
Gem Corundum, 10 inch, $10.80 per gro., 12 inch, $12.00
Cleveland Stone Co., list Nov., '92..33⅓%
Pike Mfg. Co., list '95-'96 .....33⅓%

Oil Stones, &c.

Chicago Wheel & Mfg. Co.:
Corundum Oil, Double Grit 50%
Corundum Axe Stones, Slips, etc.....35%

Pike Mfg. Co.:

Hindostan No. 1, ₱ lb.	8¢
Sand Stone	5¢
Turkey Oil Stone, Extra, 5 to 8 in.	80¢
Turkey Slips	$1.50

} 33⅓& 33⅓&10%

Lily White Washita	60¢
Rosy Red Washita	60¢
Washita Stone, Extra	50¢
Washita Stone, No. 1	40¢
Washita Stone, No. 2	30¢
Lily White Slips	90¢
Rosy Red Slips	90¢
Washita Slips, Extra	80¢
Washita Slips, No. 1	70¢
Arkansas Stone, No. 1, 3 to 5 in.	$2.80
Arkansas Stone, No. 1, 5 to 8 in.	$3.50

} 33⅓%

India Oil Stones 25%
Tanite Mills:
Emery Oil, ₱ doz. $5.00 .....50@60%

Stoners—

Cherry—

Enterprise .....25@30%

Stops, Bench—

Millers Falls .....15&10%
Morrill's...₱ doz., No. 1, $10.00; No. 2, $11.00, 40&20%

Stops, Window—

Ives' Patent .....25&5%
Wilcox, Steel, per doz., $0.00 .....50%

Stove Boards—

See *Boards, Stove.*

Stove Polish—See *Polish, Stove.*

Strainers Pump—

Diamond Joe Pump Strainers..per doz. 75¢

Straps, Box—

Cary's Universal, case lots.....20&10%

Stretchers, Carpet—

Cast Iron, Steel Points....doz. 55@65c
Sockel .....*doz. $1.75*

Strops, Razor—

Smith & Hemenway Co 70%

Stuffers, Sausage—

Miles' Challenge, ₱ doz. $20...50@50&5%
Enterprise Mfg. Co. .....25@25&7½%
National Specialty Mfg. Co., list Jan. 1, '97 .....30%

Tacks Brads, &c.—

List Jan. 15, '99.

Carpet Tacks, American...90¢&10@...%
American Cut Tacks.....90¢&30@...%
Swedes Iron Tacks.....90¢&10@...%
Swedes Upholsterers' Tacks.....
90¢&10@...%
Gimp Tacks .....*90¢&10@...%*
Lace Tacks .....*90¢&10@...%*
Trimmers' Tacks .....*90¢&30@...%*
Looking Glass Tacks .....*70¢&10@...%*
Bill Posters' and Railroad Tack....
90¢&10@...%
Hungarian Nails .....*80¢&25@...%*
Common and Patent Brads, 70¢&10@...%
Trunk and Clout Nails.. 80¢&10@...%

NOTE.—*The above prices are for Straight Weights.* An extra 5% is given Star Weights** and an extra 10&5% on Standard Weights.****

Miscellaneous—

Double Point Tacks....90¢&c or 7 tens
Steel Wire Brads, R. & E. Mfg. Co.'s list .....*50¢&10@60%*
See also *Nails, Wire.*

Tanks, Oil—

Emerald, S. S. & Co 30-gal. $3.20
Emerald, S. S. & Co 60-gal., $4.00
Queen City S. S. & Co., 30-gal.....$3.50
Queen City S. S. & Co., 60-gal.....$4.25

Tapes, Measuring—

American Asses' Skin.....40¢&10@50%
Patent Leather .....*25@50&5%*
Steel .....*40@40&5%*
Chesterman's .....*25@25&5%*
Eddy's Steel .....40@40&5%
Eddy's Metallic .....33⅓@33⅓&5%
Keuffel & Esser Co., Steel and Metallic, Lower list, 1899 .....35%
Lufkin's Steel .....33⅓@35%
Lufkin's Metallic .....30@30&5%

Thermometers—

Tin Case .....*80@80&10%*

Ties, Bale—Steel.

Standard Wire .....*50&10&5%*

Ties, Wall—

Cleveland Wire Spring Co.:
Galv. Steel 5 32 x 6½ in. ₱ 1000..$10.00
Galv. Steel 5-32 x 8½ in. ₱ 1000..$11.00
Galv. Steel 5-32 x 11½ in. ₱ 1000..$12.00
Galv. Steel 5 32 x 15½ in. ₱ 1000..$14.00

Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

Tire Benders, Upsetters, &c.—See *Benders and Upsetters, Tire*

Tobacco Cutters—

See *Cutters, Tobacco.*

Tools—

Coopers'—

L. & I. J. White .....20@20&5%

Saw—

Atkins' new list 40%
Simonds' Improved 33⅓%
Simonds' Crescent 25%

Ship—

L. & I. J. White 25%

Transom Lifters—

See *Lifters, Transom.*

Traps—Game—

Oneida Pattern .....*70¢10@75¢10%*
Newhouse .....45@50%
Hawley & Norton .....65&5&70%
Victor (Oneida Pattern) .....75@75&10%
Star (Blake Pattern) .....65&10@70&5%

Mouse and Rat—

Mouse, Wood, Choker, doz. holes...8½c
Mouse, Round or Square Wire.....
doz. $0.85@1.00
Diamond Joe Mouse Traps....per doz. 60¢
Diamond Joe Rat Traps.....per doz. $1.00
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, Each $1.12½;..₱ doz. $12.00
No. 3, Rat, ₱ doz. $6.00; case of 50 $5.25 doz.
No. 3½, Rat, ₱ doz. $4.75; case of 72 $4.25 doz.
No. 4, Mouse, ₱ doz. $3.50; case of 72 $2.75 doz.
No. 5, Mouse, ₱ doz $2.75;..case of 72 $2.25
Schuyler's Rat Killer, No. 1, ₱ gr. $30.00; No. 2, ₱ gr. $20.00; Mouse, No. 8, $18.00 .....50%

Fly—

Balloon, Globe or Acme.....
doz. $1.15@1 25; gro. $12.00@14.00
Harper, Champion or Paragon ..
doz. $1.25@1.40; gro. $13.50@15 00

Trimmers, Spoke—

Bonney's Nos. 1 and 2 .....40%

Trowels—

Diston Brick and Pointing..... .....30%
Diston Plastering 25%
Diston "Standard Brand" and Garden Trowels 40%
Never-Break Steel Garden Trowels.... gro. $7.00
Peace's Plastering 30%
Woodrough & McParlin, Pl'st'ring.25&10%

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list 40%
Daisy Stove Trucks, Improved pattern ₱ doz. $21.00
Model Stove Trucks.....₱ doz. $18.50

Tubs, Wash—

	No. 1	*2*	*3*
Galvanized, per doz.	*$5.00*	*5 50*	*6.00*

Galvanized Wash Tubs (S. S. & Co.):

No.	1	2	3	10	20	30
Per doz	$5 25	6.00	6.75	6.50	7 25	8.00

Twine—

Binder—

Small lots f. o. b, New York, Philadelphia or Boston.
White Sisal, 550 ft. to lb. per lb. 7¼ @7½c
Standard, 500 ft. to lb. ..per lb. 7¼ @7½c
Manila, 600 ft. to lb.....per lb. 8@ 8½c
Pure Manila, 650 ft. to lb. per lb. 10½c
For carloads deduct ¼c per lb.

Miscellaneous—

	BC	*B.*
Flax Twine—		
No. 9, ¼ and ½-lb. Balls..	*22c*	*24c*
No. 12, ¼ and ½-lb. Balls..	*18c*	*21c*
No. 18, ¼ and ½-lb. Balls..	*16c*	*19c*
No. 24, ¼ and ½-lb. Balls	*15½c*	*18½c*
No. 36, ¼ and ½-lb. Balls..	*15c*	*18c*

Chalk Line, Cotton, ½-lb. Balls.....
22@22½c
Cotton Mops, 6, 9, 12 and 15 lb. to doz .....*7@8c*
Cotton Wrapping, 5 Balls to lb ...
10¼c@...
American 2-Ply Hemp, ¼ and ½-lb. Balls .....*12@13c*
American 3 Ply Hemp, 1-lb. Balls..
12@15c
India 2-Ply Hemp, ¼ and ½-lb. Balls (Sewing Twine).....*9c*
India 3-Ply Hemp, 1-lb. Balls,.....*8c*
India 3-Ply Hemp, 1½-lb. Balls.... *8c*
2, 3, 4 and 5-Ply Jute, ½-lb. Balls... 10@10½c
Mason Line, Linen, ½-lb. Balls...15c
No. 264 Mattress, ¼ and ½-lb. Balls.8½c
Wool *7c*

Vises—

Solid Box 50%
Bonney's Saw Vises .....40&10%

Parallel—

Athol Machine Co.:

Simpson's Adjustable	40%
Standard	40%
Amateur	25%

Bonney's .....40&10%
Fisher & Norris Double Screw....15&10%
Hollands':

Machinists'	40%
Keystone	70%

Lewis Tool Co .....20@30%
Massey's Perfect .....15@20%
Massey's Clincher .....30@40%
Merrill's 20%
Miller's Falls .....low list 10%
Parker's:

Victor	20@25%
Regulars	20@25%
Vulcan's	40@45%
Combination Pipe	55@60%

Prentiss .....20@25%
Sargent's 40%
Simpson's Adjustable 40%
Snediker's X, L .....20@25%
Stephens' .....20@25%
Van, W. & W. Hdw. Co 40%

Saw Filers—

Bonney's, No. 1, $13; No. 3, $ 6 .50&10%
Disston's D 3 Clamp and Guide, ₱ doz $30 .....25%
Reading .....40&10%
Wentworth's Rubber Jaw, Nos. 1, 2 and 3 .....30&10%

Miscellaneous—

Bignall & Keeler Combination Pipe Vise 60%

Parker's Combination Pipe:

87 Series	60%
187 Series	60&5%
No. 870	40%

Wads—Price Per M.

B. E., 11 up	*60c*
B. E., 9 and 10	*70c*
B. E., 8	*80c*
B. E., 7	*80c*
P. E., 11 up	*$1.00*
P. E., 9 and 10	*1.25*
P. E., 8	*1.50*
P. E., 7	*1.50*
Ely's B. E., 11 and larger	*$1.70@1.75*
Ely's P. E., 12 to 20	*$3 00@3.25*

Dis. 50&2%

Wagon Jacks—

See *Jacks, Wagon.*

Ware, Hollow—

Aluminum—

S. S. & Co. Reduced List..... .....40%

Cast Iron, Hollow—

Stove Hollow Ware:
Ground *65%*
Unground *70%*
White Enameled Ware:
Maslin Kettles. *80%*
Boilers and Saucepans .....*50&10%*
Tinned Boilers and Saucepans.....
50&10%
See also *Pots, Glue.*

Enameled—

Agate Nickel Steel Ware, list July '99..35%
Granite Ware, list Jan. 1, '94, revised Jan. 2, '95 .....40&10%
Second Quality, Agate Nickel Steel..65%
Second Quality, Granite .....70&10&10%
Iron Clad:
Peppered Ware, high list 70%
Mottled Ware, high list 75%
Never Break Enameled....50&5&50&10%

Tea Kettles—

Galvanized Tea Kettles:

Inch	*6*	*7*	*8*	*9*
Each	*45c*	*50c*	*55c*	*65c*

Steel Hollow Ware.

Avery Spiders & Griddles .....65@65&5%
Avery Kettles 50%
Porcelained .....50&5&50&10%
Never Break Spiders and Griddles..... 65@65&5%
Never Break Kettles..... 60@60&10%
Solid Steel Spiders & Griddles..... 65&5%
Solid Steel Kettles 60%
Solid Steel Ware, Enameled ..... 50&5%

Washboards—

Solid Zinc: ₱ doz
Crescent, family size, bent frame..$3.00
Red Star, laundry size, stationary protector $4.25
Double Zinc Surface:
Saginaw Globe, family size, stationary protector $2.65
Wilson, family size, bent frame...$2.75
Single Zinc Surface:
Naiad protector, family size, open back peforated $2.40
Saginaw Globe, protector, family size, ventilated back $2.25
Wilson, bent frame family size, ventilated back $2.25

Washers—

Leather, Axle—

Solid.....80&10&10@85%
Patent.....85&10@35&20%
Coil: ¾ 1 1¼ 1¼ *Inch.*
11c 13c 15c 15c *per 100*

Iron or Steel—

Size bolt.... 5-16 ⅜ ½ ⅝ ¾
Washers....$5.60 4.70 3.70 3.20 3.00
In lots less than one keg add ¼c per lb., 5-lb. boxes add ½c to list.

Cast Washers—

Over ½ inch, barrel lots, per lb.....
1¼@1¾c

Washer Cutters—

See *Cutters, Washer.*

Washing Machines—

See *Machines, Washing.*

Water Coolers—

See *Coolers, Water.*

Wedges—

Oil Finish.....*lb.* 3¼c

Weights, Sash

Per ton.....$20.00@22.50
Western Foundries make price $1@$2 lower.

Well Buckets, Galvanized

See *Pails, Galvanized.*

Wheels Well—

8-in., $1.65@1.75; 10-in., $2.00@2.10; 12-in., $2.50@2.75; 14-in., $3.25@3.40

Wire and Wire Goods—

Brt. and Ann., 6 to 9.....70&10%
Brt. and Ann., 10 to 18.....72½&5%
Brt. and Ann., 19 to 26.....75&10&2½%
Brt. and Ann., 27 to 36.....75&10&2½%
Cop'd and Galv., 6 to 9.....66⅔&5%
Cop'd and Galv., 10 to 18.....70%
Cop'd and Galv., 19 to 26.....70&10%
Cop'd and Galv., 27 to 36.....72½&5%
Tinned, 6 to 14.....70&10&5%
Tinned, 15 to 18.....70&10&5%
Tinned, 19 to 26.....70%
Tinned, 27 to 36.....65&10%
Annealed Wire on Spools..70&5&10&10%
Brass and Copper Wire on Spools..60&5&10&10%
Brass, list Feb. 26, '98.....25%
Copper, list Feb. 26, '98.....15%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$6.00 to $, 40%
Wire Clothes Line, see *Lines.*
Wire Picture Cord, see *Cord.*

Bright Wire Goods—

Iron and Brass, list July 1, 1899....
85&10@..%

Wire Cloth and Netting—

Galvanized Wire Netting, 30 & 21@85%
Painted Screen Cloth per 100 ft...95c
Light Hardware Grade:
2-8 Mesh, Plain (3c. list) sq. ft..
1¾c
2-8 Mesh, Galv. (3c. list) sq ft...
2¼c

Wire Barb—See *Trade Report.*

Wire, Rope—See *Rope, Wire.*

Wrenches—

Agricultural.....70&10@75%
Case lots.....75&10%
Baxter's S.....60&10%
Coes' Genuine.....40&10&5&5%
Coes' "Mechanics'".....40&10&10&5&5%
Acme.....60&10%
Alligator.....60&10&10%
Bemis & Call's:
Adjustable S.....35&5%
Adjustable S Pipe.....40%
Brigg's Pattern.....30&10%
Combination Black.....40&5%
Combination Bright.....4[illegible]
Cylinder or Gas Pipe.....55%
Extra Heavy.....45%
Merrick's Pattern.....50%
No. 3 Pipe, Bright.....55%
Bindley Automatic.....30%
Boardman's.....33⅓&%
Bull Dog, W. & B.....60&10&10%
Donohue's Engineer.....40&10%
Eagle.....50&10%
Gem Pocket.....70%
Hercules.....70%
Solid Handles, P. S. & W.....50&10%
Stevenson.....60&10&10%

Wrought Goods—

Staples, Hooks, &c., list March 17 '92.....85&10@85&5%

Yokes, Neck—

Covert Saddlery Works, Trimmed.60&%
Covert Saddlery Works, Neck Yoke Centers.....70%

Yokes, Ox, and Ox Bows—

Fort Madison's Farmers & Freighters'.. list net

Zinc—

Sheet.....*lb* 6¼c@7c

PAINTS, OILS AND COLORS.—Wholesale Prices.

White Lead, Zinc, &c.

Lead, Foreign white, in Oil.. .. 7¾@ 9¾
Lead, American White, in Oil:
Lots of 500 ℔ or over.....@ 6½
Lots less than 500 ℔.....@ 7
Lead, White, in oil, 25 ℔ tin pails, add to keg price.....@ ½
Lead, White, in oil, 12½ ℔ tin pails, add to keg price.....@ 1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price..@ 1½
Lead White, Dry in bbls.....5¾@ 6
Lead, American, Terms: On lots of 500 lbs. and over, 60 days, or 2% for cash if paid in 15 days from date of invoice.
Zinc, American, dry.....℔ ℔ 4¾@ 4⅞
Zinc, Paris, Red Seal, dry.....@ 8½
Zinc, Paris, Green Seal, dry.....@ 9⅞
Zinc, Antwerp Red Seal, dry...@ 6½
Zinc, Antwerp, Green Seal, dry..@ 7¾
Zinc, V. M. French, in Poppy Oil, Green Seal:
Lots of 1 ton and over.....12 @12½
Lots of less than 1 ton.....12¼@12¾
Zinc, V. M French, in Poppy Oil, Red Seal:
Lots of 1 ton and over.....10¾@11⅛
Lots of less than 1 ton.....11@11½
DISCOUNTS.—V. M. French Zinc.—Discounts to buyers of 10 bb'l, lots of one or assorted grades, 1%; 25 bbls., 2%; 50 bbls., 4%.

Dry Colors.

Black, Carbon.....℔ ℔ 8 @30
Black, Drop, Amer.....2½@ 4
Black, Drop, Eng.....7 @11
Black, Ivory.....15 @21
Lamp, Com.....3 @ 5
Blue, Celestial.....℔ ℔ 4 @ 6
Blue, Chinese.....30 @35
Blue, Prussian.....28 @34
Blue, Ultramarine.....30 @35
Brown, Spanish.....½@ 1
Brown, Vandyke, Amer.....1¾@ 2½
Brown, Vandyke, Foreign.....2½@ 3½
Carmine, No. 40.....℔ ℔$2.05@2.75
Green, Chrome, ordinary.....5 @ 6
Green, Chrome, pure.....16 @20
Lead, ited, bbls. ½ bbls. and kegs:
Lots 500 ℔ or over.....@ 6
Lots less than 500 ℔.....@ 6½
Litharge, bbls. ½ bbls. and kegs:
Lots 500 ℔ or over.....@ 6
Lots less than 500 ℔.....@ 6½
Ocher, French Washed.....1¼@ 2½
Ocher, Dutch Washed.....4½@ 5
Ocher, American..℔ ton $10.00@15.00
Orange Mineral, English..℔ ℔ 8½@11¼
Orange Mineral, French.....11½@11⅝
Orange Mineral, German.....8¾@ 9¼
Orange Mineral, American....7¾@ 8
Red, Indian, English.....4½@ 8½
Red, Indian, American.....3 @ 3¼
Red, Turkey, English.....4 @ 6
Red, Tuscan, English.....7 @10
Red, Venetian, Amer., ℔ 100 ℔, 80@1.10
Red Venetian, English ℔ ℔ ..1.80@2.10
Sienna, Italian, Burnt and Powdered.....℔ ℔ 3½@ 9½
Sienna, Ital., Raw, Powd.....3½@ 7½
Sienna, American, Raw.....1½@ 2
Sienna, American, Burnt and Powdered.....℔ ℔ 1½@ 2
Talc, French.....℔ 100 ℔ $1.25@1.50
Talc, American.....90 @1.10
Terra Alba, French, ℔ 100 ℔ .95 @1.00
Terra Alba, American No. 1....85 @85
Terra Alba, English.....95 @1.00
Terra Alba, American No. 2....45 @50
Umber, Turkey, Bnt. & Pow. ℔ ℔ 2½@ 3½
Umber, Turkey, Raw & Powd. 2½@ 3½
Umber, Bnt. Amer.....1½@ 2
Umber, Raw, Amer.....1½@ 2
Yellow, Chrome.....10½@25
Vermilion, American Lead....10 @23
Vermilion, Quicksilver, bulk..@70
Vermilion, Quicksilver, bags....@71
Vermilion, English, Import..80 @95
Vermilion, Chinese....$1.00@1.20

Colors in Oil.

Black, Lampblack.....12 @14
Blue, Chinese.....36 @40
Blue, Prussian.....32 @36
Blue, Ultramarine.....13 @16
Brown, Vandyke.....9½@13
Green, Chrome.....10 @12
Green, Paris.....@21
Sienna, Raw.....10 @13
Sienna, Burnt.....10 @13
Umber, Raw.....9½@12
Umber, Burnt.....9½@12

Miscellaneous.

Barytes, Foreign, ℔ ton....$19.00@21.00
Barytes, Amer. floated.....19.00@20.00
Barytes, Crude.....8.00@10.00
Chalk, in bulk.....℔ ton 2.60@ 2.75
Chalk, in bbls.....℔ 100 ℔ ..@ 35
China Clay, English..℔ ton 12.00@17.50
Cobalt, Oxide.....℔ 100 ℔ 2.20@ 2.50
Whiting, Common. ℔ 100 ℔ .42@ .52
Whiting, Gilders'.....54@ .64
Whiting, extra Gilders'....58@ .68

Putty.

In bulk.....$1.90
In bladders.....2.40
In cans, 12 ℔ to 25 ℔.....2.50
In cans, 1 ℔ to 5 ℔.....3.60

Spirits Turpentine.

In Southern bbls.....@40¢
In machine bbls.....@40½¢

Glue.

Low Grade.....℔ ℔ 12 @13½
Cabinet.....13½@16½
Medium White.....14½@16½
Extra White.....18 @23
French.....12 @40
Irish.....13½@16

Animal, Fish and Vegetable Oils.

Linseed, City, raw.....℔ gal. 58@65
Linseed, City, boiled.....59 @67
Linseed, State and West'n, raw 58 @65
Linseed, raw Calcutta seed.....@85
Lard, Prime.....66 @67
Lard, Extra No. 1.....50 @52
Lard, No. 1.....41 @43
Cotton-seed, Crude.....27½@28
Cotton-seed, Summer Yellow, prime.....31 @31½
Cotton-seed Summer Yellow, off grades.....30 @30½
Sperm, Crude.....@ ..
Sperm, Natural Spring.....@ ..
Sperm, Bleached Spring.....@ ..
Sperm, Natural Winter.....57 @58
Sperm, Bleached Winter.....62 @63
Whale, Crude.....@ ..
Whale, Natural Winter.....@47
Whale, Bleached Winter.....@48
Menhaden, Crude, Sound.....28 @29
Menhaden, Light Strained....32 @33
Menhaden, Bleached Winter...35 @ ..
Menhaden, Ex Bleached Winter38 @39
Tallow, prime.....52 @53
Cocoanut, Ceylon.....5½@ 6
Cocoanut, Cochin.....6½@ 6¾
Cod, Domestic.....34 @35
Cod, Newfoundland.....36 @38
Red Elaine.....35 @ ..
Red Saponified.....℔ ℔ 5 @ 5¼
Olive, Italian, bbls.....57 @61
Neatsfoot, prime.....52 @54
Palm, prime, Lagos.....℔ ℔ 5¼@6

Mineral Oils.

Black, 20 gravity, 25@30 cold test.....℔ gal. 9¾@10¼
Black, 29 gravity, 15 cold test. 10¾@11¼
Black, [illegible] test.....9¾@ 9¾
Cylinder, light filtered.....14¾@17¾
Cylinder, dark filtered.....11¾@16½
Paraffine, 903-907 gravity.....12½@12¾
Paraffine, 903 gravity.....11¾@11¾
Paraffine, 893 gravity.....9½@10
Paraffine, red, No. 1.....12¼@12¾
In small lots ½¢ advance.

THE IRON AGE.

The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades, and a standard authority on all matters relating to those branches of industry.

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CURRENT METAL PRICES.

JANUARY 30, 1901.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from Store—

Common Iron: Duty, Round, 0.6¢ ₩ lb; Square, 0.8¢ ₩ lb
1 to 1⅜ in. round and square ..... ₩ lb 1.70@1.80¢
1¼ to 4 in. x ⅜ to 1 in..... .....
Refined Iron:
1 to 1⅜ in. round and square..... ₩ lb 1.75@1.85¢
1⅜ to 4 in. x ⅜ to 1 in..... ₩ lb 1.90@2.00¢
1⅜ to 4 in. x ¼ to 5-16..... ₩ lb 2.10@2.20¢
Rods—¾ and 11-16 round and square. ₩ lb 2.10@2.20¢

Angles:	Cts ₩ lb
3 in x ¼ in. and larger	2.00¢
3 to 3½ in. x 3-16 in	2.00¢
1¼ to 3 in. x 1/4 in	2.10¢
1⅛ to 2⅜ in. x 3-16 in and thicker	2.00¢
1 to 1¼ in. x 3-16 in	2.10¢
1 to 1¼ x ⅛ in	2.20¢
¾ x ⅛ in	2.50¢
½ x ⅛ in	2.55¢
⅜ x ⅛ in	3.20¢
½ x 3-32 in	3.70¢
Tees:	
1 in	2.50¢
1¼ in	2.40¢
1½ in. and larger	2.30¢
Beams	2.75¢
Channels, 3 in. and larger	2.25¢
Bands—1½ to 6 x 3-16 to No. 8	₩ lb 2.15¢
"Burden's Best" Iron, base price	₩ lb 3.15¢
Burden's "H. B & S. Iron, base price	₩ lb 2.95¢
"Ulster"	₩ lb 3.60¢
Norway Bars	4 @4½¢
Norway Shapes	4½@4¾¢

Merchant Steel from Store—

	per lb
Bessemer Machinery	1.75 to 1.85¢
Toe Calk, Tire and Sleigh Shoe	2.00@2.50¢
Best Cast Steel, base price in small lots	7½¢
Best Cast Steel Machinery, base price in small lots	6 ¢

Soft Steel Sheets—

¼ inch	2¢	No. 14	2.50¢
8-16 inch	2.05¢	No .16	2.60¢
No. 8	2.20¢	No. 18	2.90¢
No. 10	2.30¢	No. 20	3.30¢
No. 12	2.40¢	No. 22	3.40¢

Sheet Iron from Store.

Black.

	One Pass, C. R. Soft Steel.	R. G. Cleaned.
Nos. 14 to 16	₩ lb, 3.05	3.10¢
Nos. 18 to 21	₩ lb, 3.15	3.20¢
Nos. 22 to 24	₩ lb, 3.25	3.30¢
Nos. 25 and 26	₩ lb, 3.35	3.40¢
No. 27	₩ lb, 3.45	3.50¢
No. 28	₩ lb, 3.55	3.60¢

Russia, Planished, &c.

Genuine Russia, according to assortment ₩ lb 10½¢
Patent Planished ₩ lb A, 10¢; B, 9¢, net.

Galvanized.

	B. B.
Nos. 10 to 16	₩ lb, 12¢
Nos. 17 to 21	₩ lb, 13¢
Nos. 22 to 24	₩ lb, 14¢
Nos. 25 to 26	₩ lb, 15¢
No. 27	₩ lb, 16¢
No. 28	₩ lb, 17¢
No. 29	₩ lb, 19¢
No. 30	₩ lb, 21¢

70@70&5%off

36 in. 1¢ ₩ lb higher.

Foreign Steel from Store—

Best Cast	₩ lb 15 ¢
Extra Cast	₩ lb 18 @ 20 ¢
Swaged, Cast	₩ lb 16 ¢
Best Double Shear	₩ lb 15 ¢
Blister, 1st quality	₩ lb 13 ¢
German Steel, Best	₩ lb 10 ¢
2d quality	₩ lb 9 ¢
3d quality	₩ lb 8 ¢
Sheet Cast Steel, 1st quality	₩ lb 15 ¢
2d quality	₩ lb 14 ¢
3d quality	₩ lb 12 ¢
R. Mushet's "Special"	₩ lb 46 ¢
" " " Annealed	₩ lb 75 ¢
" " "Titanic"	₩ lb 19 ¢
Hobson's Choice XX Extra Best	₩ lb 35 ¢
Jessop Self Hardening	₩ lb 45 ¢
Seamans' "Nelson" Steel	40 ¢
Hobson's "Soho" Special Self-Hardening	₩ lb 43 ¢

METALS—

Tin—

Duty.—Pigs, Bars and Block. Free.	Per lb
Banca, Pigs	28@28¼¢
Straits, Pigs	27½@28¢
Straits in Bars	28½@29¢

Tin Plates—

American Charcoal Plates.

Calland Grade:	
IC, 14 x 20	$6.75
IX, 14 x 20	8.25
Melyn Grade:	
IC, 14 x 20	6.25
IX, 14 x 20	7.75
Allaway Grade:	
IC, 14 x 20	5.50
IX, 14 x 20	6.50

American Coke Plates—Bessemer—

IC, 14 x 20 ..... 108 lb	$4.85@4.90
IX, 14 x 20	$5.95@6.00
IXX 14 x 20	$7.20@7.25

American Terne Plates—

IC, 20 x 28	$9 50@10.00
IX, 20 x 28	11.25@12.00

Tin Boiler Plates, American—

IXX, 14 x 26 ..... 112 sheets	$12.50
IXX, 14 x 28 ..... 112 sheets	13.50
IXX, 14 x 31 ..... 112 sheets	15.00

Copper—

Duty: Pig, Bar and Ingot and Old Copper free Manufactured, 2½¢ ₩ lb.

Ingot—

Lake	17¼@17¾¢
Ansonia grade Casting	16¾@17¼¢

Sheet and Bolt—

January 19, 1900. Net.

Prices, in cents per pound. Sheet 30 x 60.

Not wider than	Not longer than	And longer than	64 oz. & over, 50 lb. sheet, 30 x 60 and heavier.	38 oz. to 64 oz., 25 to 50 lb.	24 oz. to 38 oz., 18¾ to 25 lb.	16 oz. to 24 oz., 12½ to 18¾ lb.	14 oz. and 15 oz., 11 to 12½ lb.	12 oz. and 13 oz., 9½ to 11 lb.	10 oz. and 11 oz., 7¾ to 9½ lb.	8 oz. and 9 oz., 6¼ to 7¾ lb.	Lighter than 8 oz.
Ins.	Ins.	Ins.									
30	72	.....	20½	20½	20½	20½	21½	22½	23½	26½	29½
30	96	72	20½	20½	20½	20½	21½	23½	26½	29½	
30	.....	96	20½	20½	20½	20½	22½	26½			
36	72	.....	20½	20½	20½	20½	22½	24½	27½	30½	
36	96	72	20½	20½	20½	22½	23½	26½	29½		
36	120	96	20½	20½	20½	22½	23½				
36	.....	120	20½	20½	21½	22½					
48	72	.....	20½	20½	21½	22½	24½	27½	30½		
48	96	72	20½	20½	21½	23½	25½	28½			
48	120	96	20½	21½	22½	24½	26½				
48	.....	120	20½	21½	23½	26½					
60	72	.....	20½	21½	22½	23½	26½	31½			
60	96	72	20½	20½	22½	24½	29½				
60	120	96	20½	21½	23½	26½					
60	.....	120	20½	22½	24½	28½					
72	96	.....	20½	21½	23½	28½					
72	144	96	20½	22½	25½	30½					
72	.....	144	21½	23½	28½						
108	120	.....	21½	23½	29½						
108	.....	120	23½	24½							
wider than 108	144	.....	24½	26½							
	.....	144	25½	28½							

Bolt Copper, ¾ inch diameter and over, ₩ lb 20½¢
Circles, Segments and Pattern Sheets, 3¢ ₩ lb advance over price of sheet Copper required to cut them from.
Cold or Hard Rolled Copper 14 oz. ₩ square foot and 1 heavier, 1¢ ₩ lb over the foregoing prices.
Cold or Hard Rolled Copper, lighter than 14 oz. ₩ square foot, 2¢ ₩ lb over the foregoing prices.
All Polished Copper, 20 in. wide and under 1¢ ₩ lb advance over the price for Cold Rolled Copper.
All Polished Copper, over 20 in. wide, 2¢ ₩ lb advance over the price for Cold Rolled Copper.

Planished Copper—

1¢ ₩ lb more than Polished Copper.

Copper Bottoms, Pits and Flats—

14 oz. to square foot and heavier, ₩ lb	24½¢
12 oz. and up to 14 oz. to square foot, ₩ lb	25½¢
10 oz. and up to 12 oz., ₩ lb	27½¢
Lighter than 10 oz., ₩ lb	30½¢

Circles less than 8 in. diameter, 2¢ ₩ lb additional.
Circles over 13 in diameter are not classed as Copper Bottoms.

Copper Wire—

Hard and Soft Drawn—B. & S. Gauge.

List March 2, 1900.

Nos.	0000 to 8 Base	9 and 10		11 and 12
	½¢	½¢		¾¢ ₩ lb adv.
Nos.	13	14	15	16
	¾¢	¾¢	1¢	1¼¢ ₩ lb adv.
Nos.	17	18	19	20
	1¾¢	2¢	2½¢	2¾¢ ₩ lb adv.

Seamless Brass Tubes—

Standard always Stubs' gauge, unless otherwise ordered.

Feb. 6, 1899. Net.

Stubs' W.G.	B. & S. W.G.	Outside Diameter. ⅛	5-16	⅜	7-16	½	9-16	⅝	¾	⅞	1	1⅛	1¼
4-11	3- 9	...	.....	...	.....	33	31	30	29	28	27	25	24
12	10	...	.....	37	35	33	31	30	29	28	27	25	24
13	11	...	.....	37	35	33	31	30	29	28	27	25	24
14	12	...	41	37	35	33	31	30	29	28	27	25	24
15	13	...	42	38	36	33	32	31	30	30	28	26	25
16	14	...	43	39	37	34	33	32	31	30	29	26	25
17	15	...	44	40	38	35	34	33	32	31	30	27	25
18	16	61	46	42	39	38	35	34	32	31	30	28	27
19	17	62	47	43	40	37	36	35	34	33	32	30	29
20	18–19	64	49	44	41	39	38	37	36	35	34	32	31
21	20	66	51	46	43	41	40	39	38	37	36	35	34
22	21	71	56	48	44	42	41	40	39	38	37	37	36
23	22	76	61	50	46	44	43	42	41	40	39	39	39
24	23	81	66	53	48	46	45	44	43	41	40	40	41
25	24	86	71	56	51	49	47	46	45	43	43	44	45

Copper Bronze and Gilding Tube, 3¢ ₩ lb additional

Iron Pipe Sizes—Brass

⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6 inch
36	32	29	27	21	21	21	21	21	21	21	23	23	25	27	28½₩lb

Copper, Bronze or Gilding Tubes, 3¢ ₩ lb additional

Brazed Brass Tubing.

(*To No.* 19, *inclusive.*) Feb. 26 1896

Brown & Sharpe's gauge standard.

	Per lb.
Plain Round Tube, ⅛ in. up to 2 in	$0.35
" " ⅛ " ¼ "	.36
" " ¼ " ⅜ "	.38
" " ⅜ " ½ "	.41
" " ½ " 5-16 "	.48
" " 5-16 " ¼ "	.65
" " ¼ " 3-16 " ¼ "	1.00
" " ¼ " 3-16 "	1.50
Smaller than ¼ inch	Special
3 inch and larger	.40
Over 3 inch to 3½ inch, inclusive	.45
Over 3½ inch	.50

Bronze and Copper, advance on Brass List, 3 cents.
Discount from list 25

Roll and Sheet Brass—

(*Brown & Sharpe Standard Gauge.*)

Common High Brass	in.	in.	in.	in.	in.	in.	in.	in.	in.
Wider than	2	12	14	16	18	20	22	24	26
and including	12	14	16	18	20	22	24	26	
To No. 20 inclusive	.23	.23	.25	.27	.29	.31	.33	.36	
Nos. 21 22, 23 and 24	.22	.24	.26	.28	.30	.32	.34	.37	
Nos. 25 and 26	.23	.24½	.27	.29	.31	.33	.35	.38	
Nos. 27 and 28	.23	.25	.28	.30	.32	.34	.36	.39	
Common High Brass	in.	in.	in.	in.	in.	in.	in.	in.	in.
Wider than	26	28	30	32	34	36	38	40	
and including	28	30	32	34	36	38	40		
To No. 20, inclusive	.39	.42	.46	.50	.55	.60	.65	*	
Nos. 21, 22, 23 and 24	.40	.43	.47	.51	.56	.61	.68		
Nos. 25 and 26	.41	.44	.48	.52	.57	.63	.71		
Nos. 27 and 28	.42	.45	.49	.53	.58	.65	.75		

* Special prices not less than 80 cents.
Add 1¢ ₩ lb additional for each number thinner than Nos. 28 to 38 inclusive. Discount from List..... 20%

Wire in Coils.

List February 26, 1896.

Brown & Sharpe's gauge the standard.	Com. high brass.	Low brass.	Gild'g bronze and copper
All Nos. to No. 10, inclusive	$0.28	$0.27	$0.28
Above No. 10 to No. 16	.28½	.27½	.28½
No. 17 and No. 18	.24	.28	.32
No. 19 and No. 20	.25	.29	.33
No. 21	.26	.30	.34
No. 22	.27	.31	.35
No. 23	.28	.32	.36
No. 24	.30	.34	.38
No. 25	.32	.36	.40
No. 26	.35	.39	.43
No. 27	.38	.42	.46
No. 28	.42	.46	.51
No. 29	.45	.49	.54
No. 30	.48	.52	.62
No. 31	.51	.55	.67
No. 32	.55	.59	.73
No. 33	.59	.63	.83
No. 34	.64	.68	.95
No. 35	.70	.74	1.30
No. 36	.76	.80	1.50
No. 37	1.00	1.04	1.70
No. 38	1.30	1.34	2.00
No. 39	2.00	2.00	3.25
No. 40	2.60	2.60	5.75

Discount, Brass Wire, 20%; Copper Wire, Nrt.
List November 16, '96.
Spring Wire, 2¢ ₩ lb advance.

Tobin Bronze—

Straight, but not turned, Rods, ⅝ to 3 in. diameter, ₩ lb, net..... 20¢
Finished Piston Rods, ⅝ to 2½ in. diameter, ₩ lb net. 21¢
Other sizes and extreme lengths, special prices.

Spelter—

Duty: In Blocks or Pigs, 1¢ ₩ lb
Western Spelter..... 4.55@4.60¢

Zinc.

Duty: Sheet, 2¢ ₩ lb.

600 lb casks..... 6¾¢ | Per lb..... 7¼¢

Lead.

Duty: Pigs and Bars and Old, 2½¢ ₩ lb. Pipe and Sheets, 2½¢ ₩ lb.

American Pig	4½@4¾¢
Bar	5½@5¾¢
Pipe	4½@4¾¢
Tin Lined Pipe	12½¢..... 20% off
Block Tin Pipe	40 ¢..... 20% off
Sheet Lead, full rolls	7¢..... 20% off
Sheet Lead, cut	7½¢..... 20% off

Old Lead in exchange, 4½¢ ₩ lb.

Solder.

½ & ¼, guaranteed..... 18½@19 ¢
No. 1..... 14½@17 ¢

Prices of Solder indicated by private brand vary according to composition.

Antimony—

Duty, ¾¢ ₩ lb.

Cookson	₩ lb 11¢
Hallett's	₩ lb 9½@10¢
U. S.	₩ lb 9¾¢

Aluminum—

Duty: Crude, 8¢ ₩ lb. Plates, Sheets, Bars and Rods, 13¢ ₩ lb.

No. 1 Aluminum (guaranteed over 99% pure), in ingots for remelting:
Small lots ₩ lb 37¢
100-lb lots ₩ lb 35¢
No. 2 Aluminum (guaranteed to be over 90% pure), in ingots for remelting:
Small lots ₩ lb 34¢
100-lb lots ₩ lb 33¢

Aluminum Sheet, B. & S. gauge. 50 lb or more.

Wider than	6-in.	14-in.	24-in.
And including	14-in.	24-in.	30-in.
	₩ lb.	₩ lb	₩ lb
Nos. 13 to 19	$0.42	$0.44	$0.47
No. 20	.44	.46	.49
Nos. 21 to 23	.46	.48	.51
No. 24	.46	.50	.53
No. 25	.47	.51	.54
No. 26	.47	.54	.59
No. 27	.48	.57	.62
No. 28	.48	.52	.64
No. 29	.49	.60	.69
No. 30	.50	.64	.77

Note.—Lots of less than 50 lb 5¢ ₩ lb extra.

Aluminum Wire, B. & S. Gauge.

Larger than No. 9	₩ lb 40¢	No. 15	₩ lb 43¢
No. 9 to No. 10	₩ lb 40½¢	No. 17	₩ lb 50¢
No. 11	₩ lb 41 ¢	No. 18	₩ lb 55¢
No. 12	₩ lb 41½¢	No. 19	₩ lb 60¢
No. 13	₩ lb 42 ¢	No. 20	₩ lb 65¢
No. 14	₩ lb 44½¢	No. 21	₩ lb 85¢

Old Metals.

Dealers' Purchasing Prices Paid in New York.

Heavy Copper	₩ lb 14¾¢
Light and Tinned Copper	₩ lb 13¾¢
Heavy Brass	₩ lb 9¾¢
Light Brass	₩ lb 7¾¢
Lead	₩ lb 4¼¢
Tea Lead	₩ lb 3¾¢
Zinc	₩ lb 3 ¢
No. 1 pewter	₩ lb 17 ¢
No. 2 Pewter	₩ lb 9¾¢
Tin Plate scrap	₩ ton $6.50
Wrought Scrap Iron	₩ gross ton $10.00@
Heavy Cast Scrap	₩ gross ton $10.00@11.50
Stove Plate Scrap	₩ gross ton $7.00@ 7.50
Burnt Iron	₩ gross ton $5.00@ 5.50